NOLOGY DEPT.

Gas Journal

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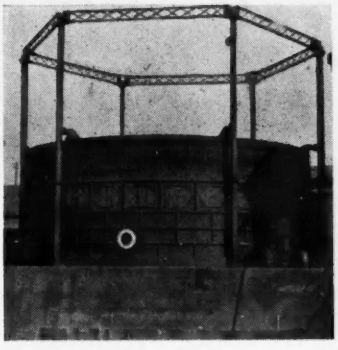
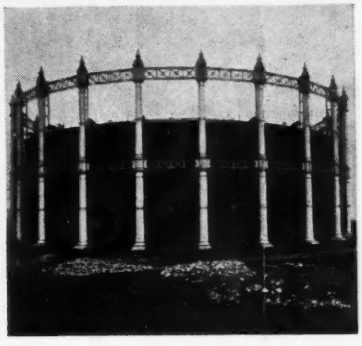
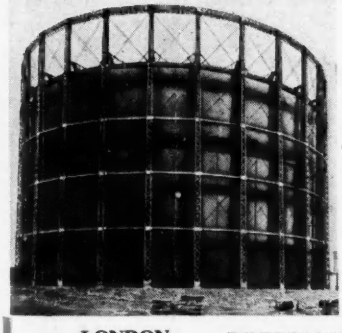
Making GASHOLDER History

MAIDENHEAD
A typical example of early Gasholder design erected by us in 1854.





DUBLIN
A usual design of our large Gasholders in the 'eighties of last century, 200 ft. diameter, 2½ million cubic ft. capacity. Guide frame, cast-iron columns.



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The largest Gasholder of its period, erected by us in 1894. 8 million cubic ft. capacity. 3 lifts 55 feet deep. Wrought iron guide frame.

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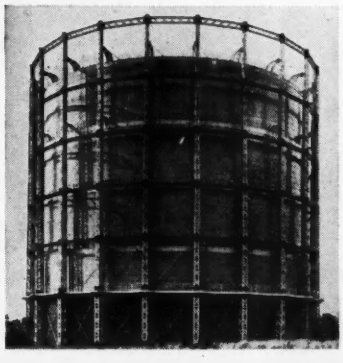
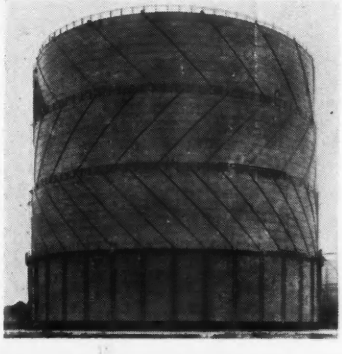
An example of a large guide-framed Gasholder. Steel tank, steel guide frame, heavy delivering pressure. Capacity 3 million cubic ft. Erected by us 1930.





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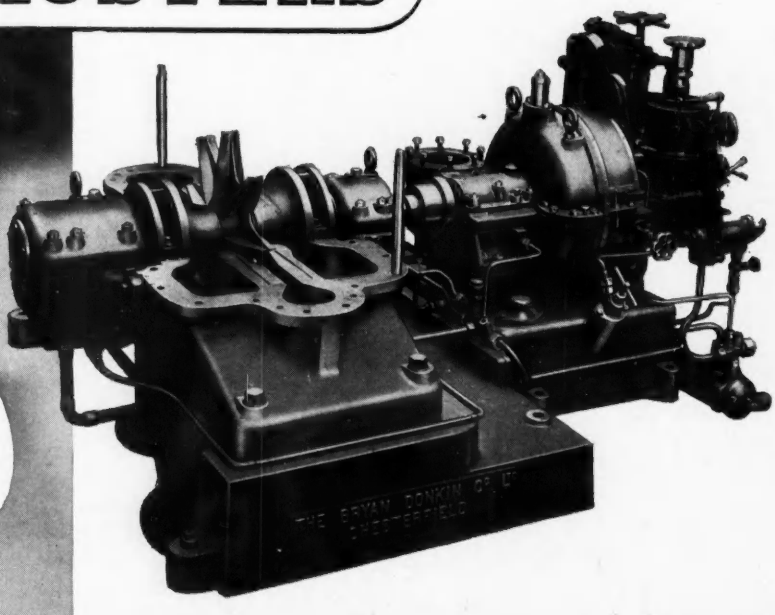

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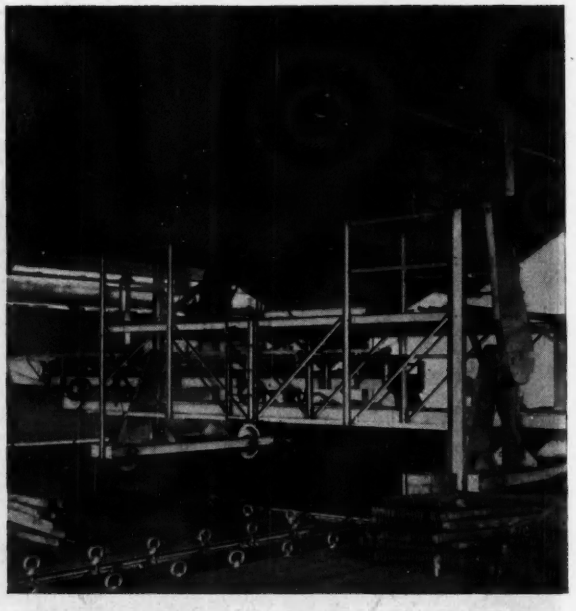

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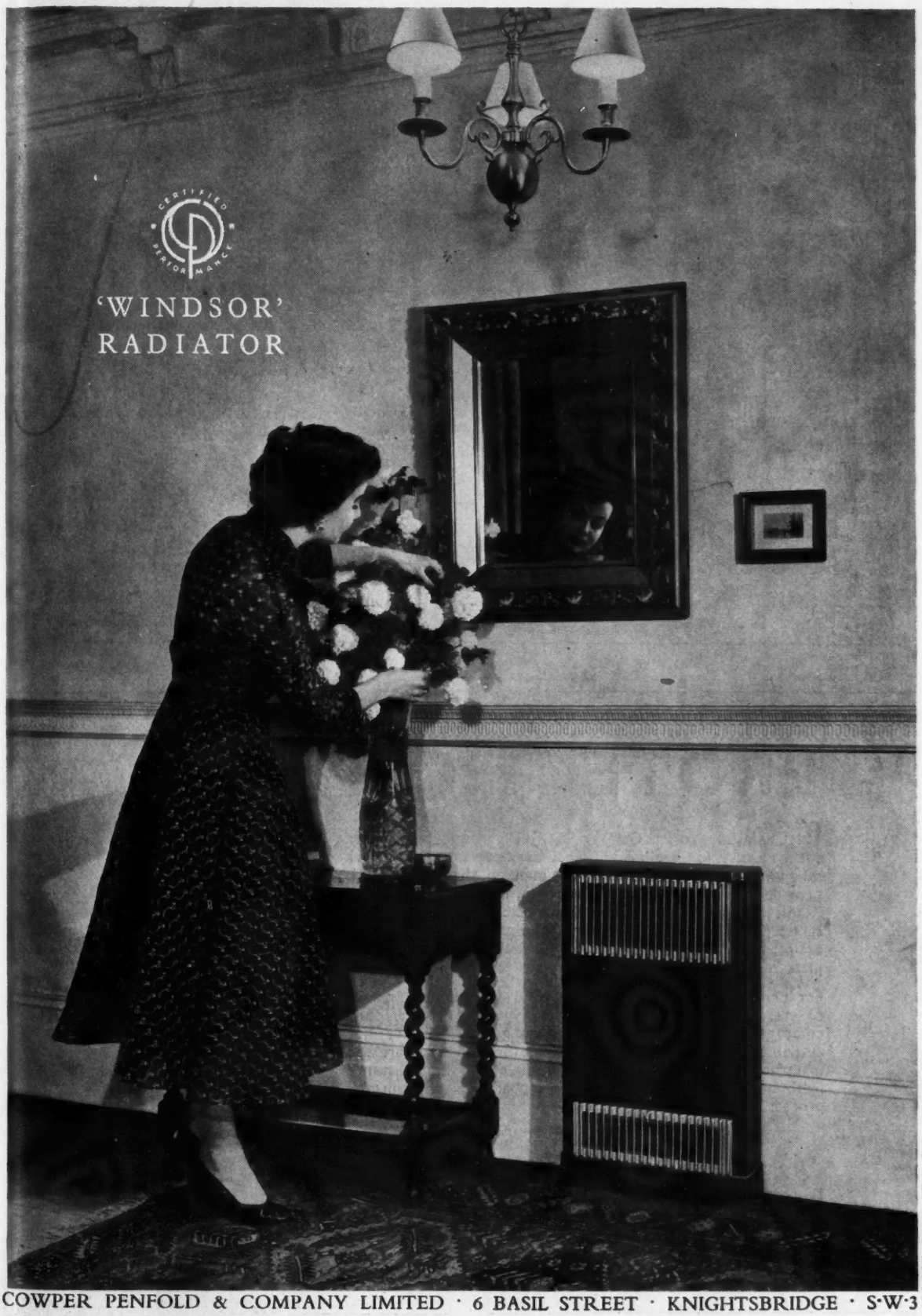

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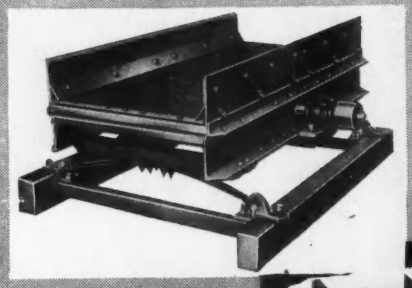

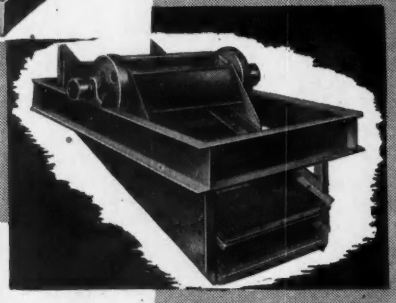

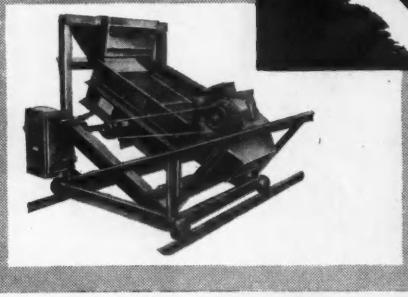

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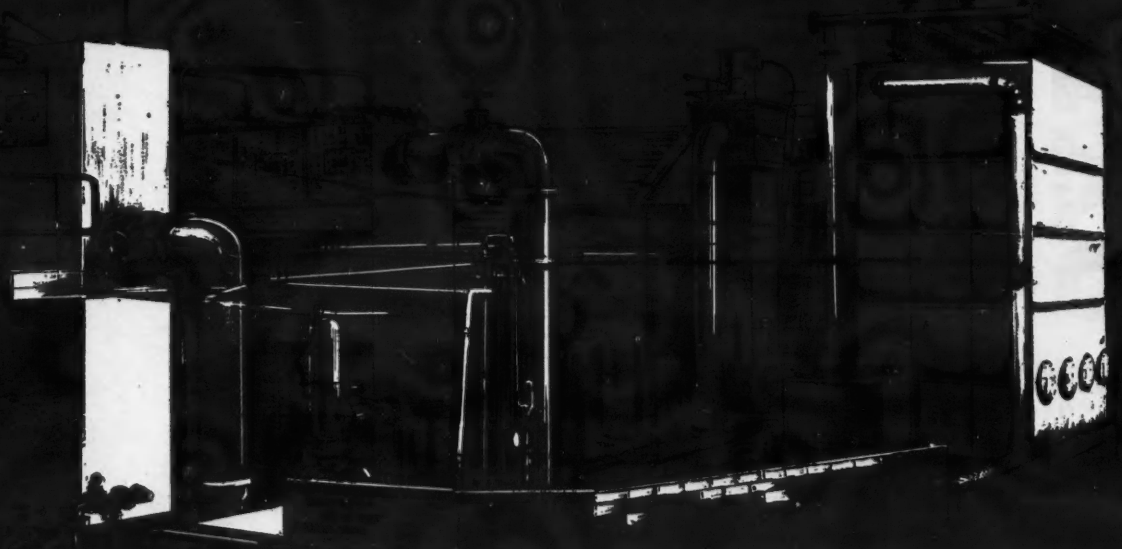

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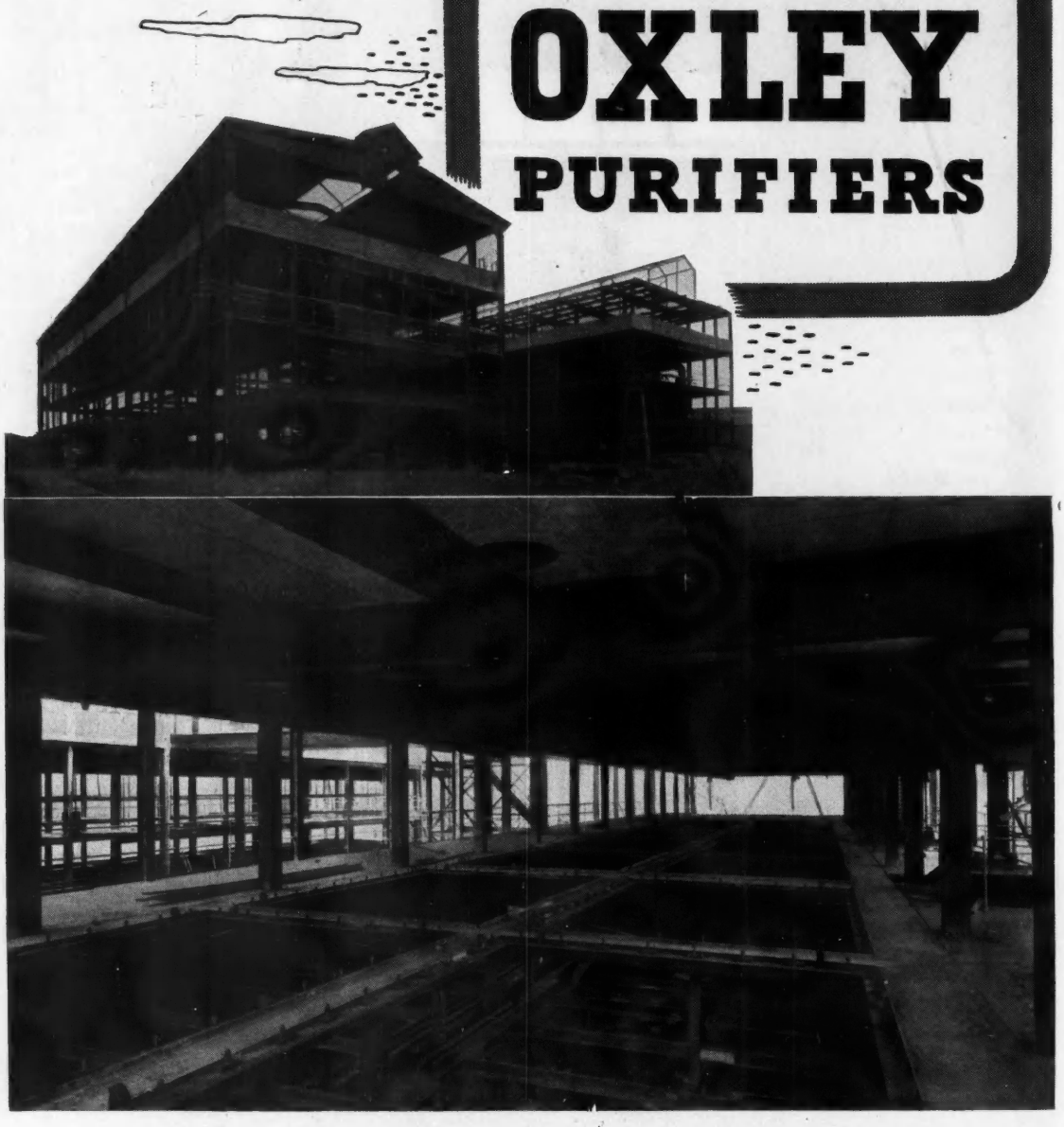
OXLEY PURIFIERS



Above: M.S. electrically-welded purifiers in steel buildings, under erection at Howden. Installation comprises three sets of purifiers, each set including 4 boxes, 40 ft. by 30 ft. by 8 ft., with 24 in. bore mains and reverse and divided flow valves.

(Reproduced by courtesy of the Northern Gas Board).

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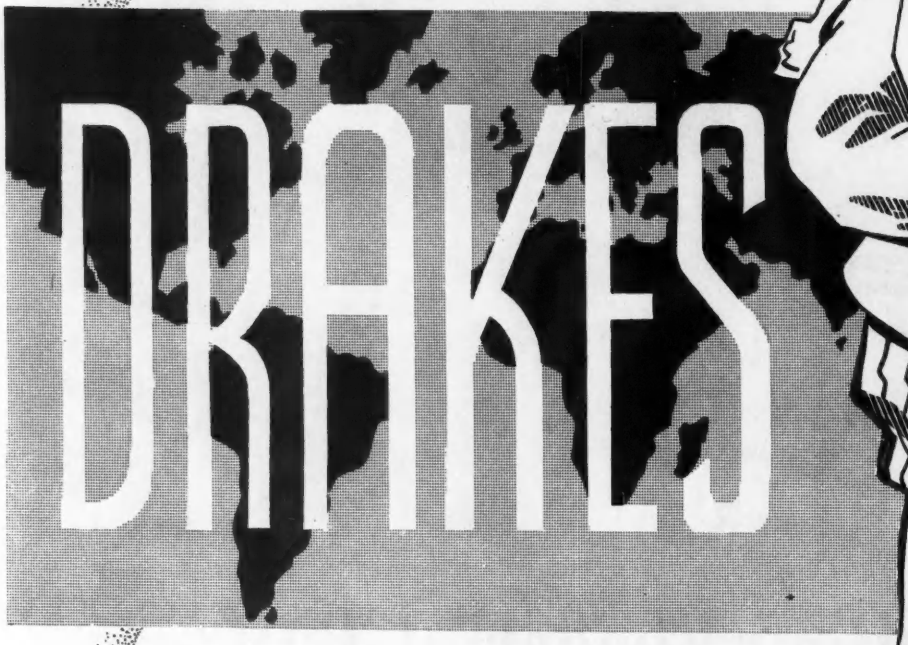

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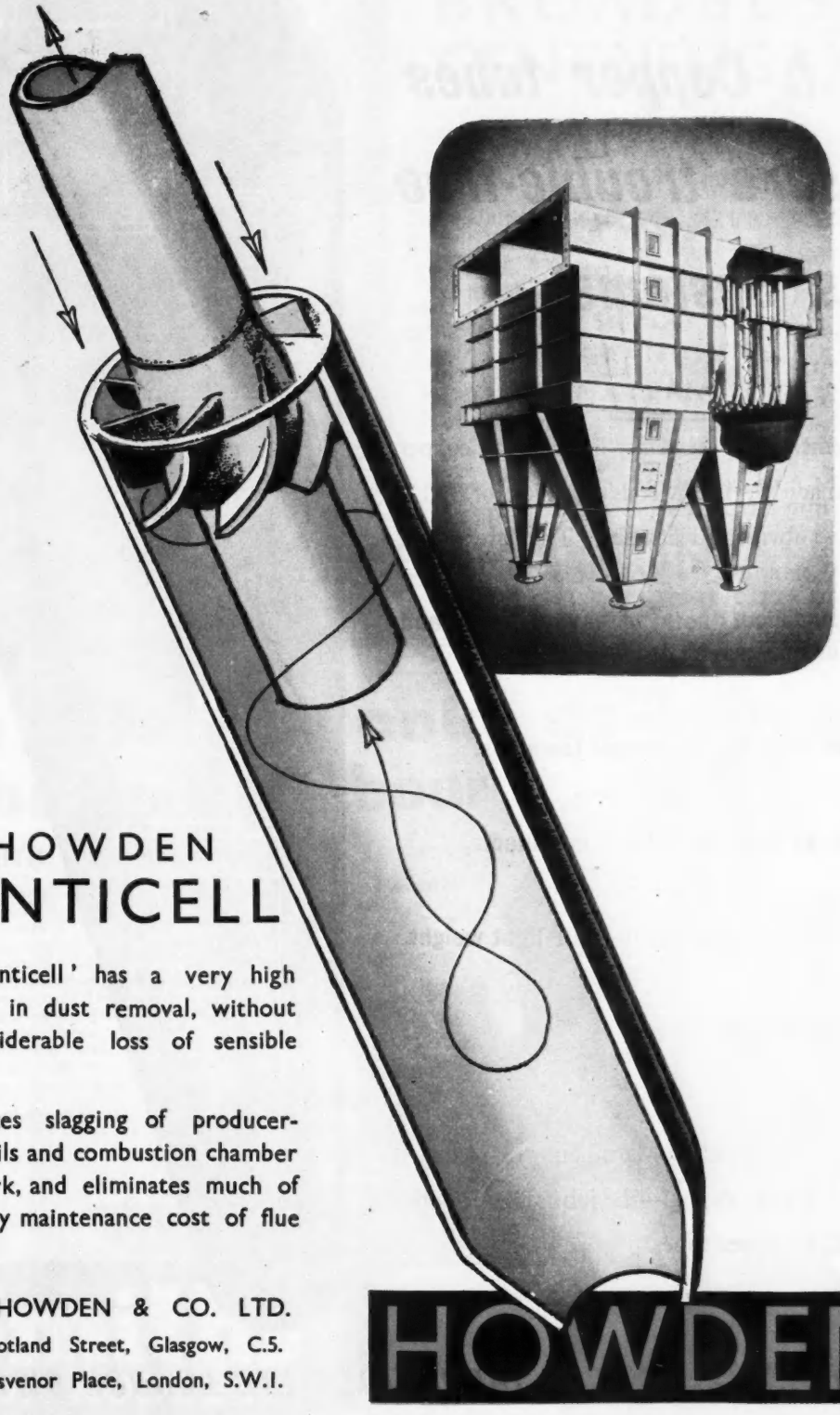

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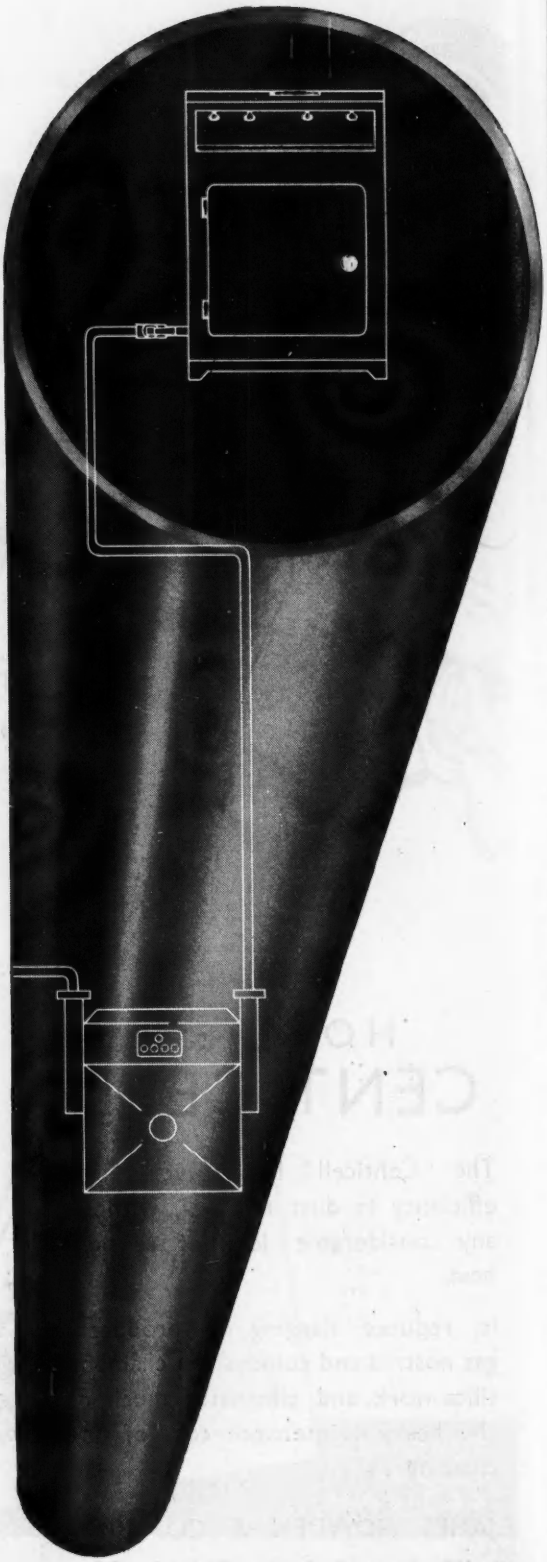

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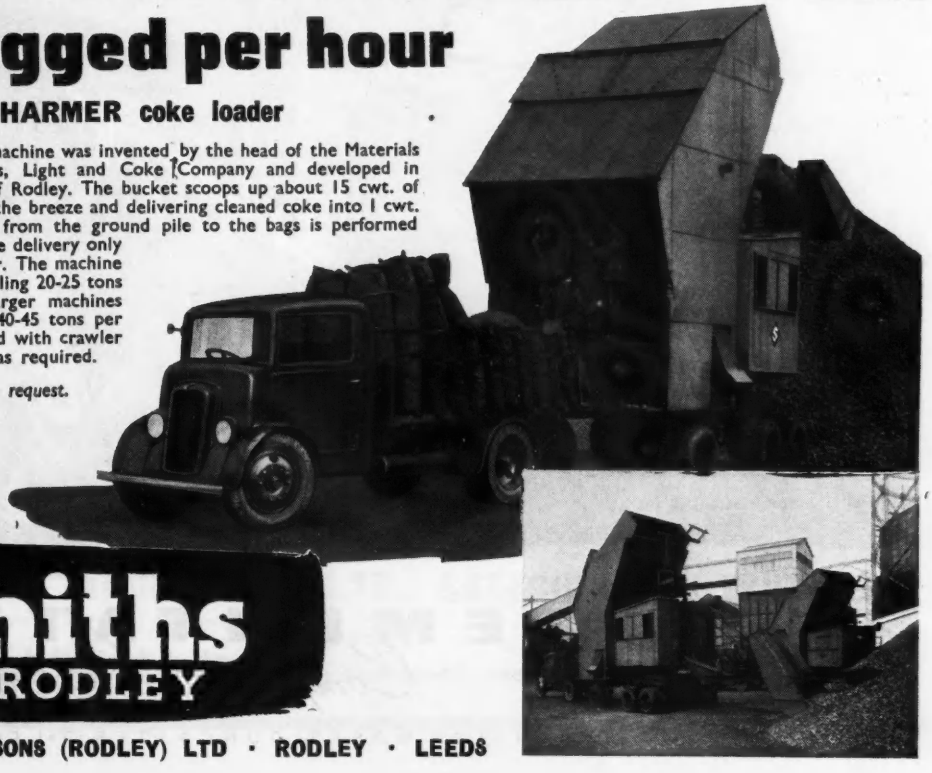

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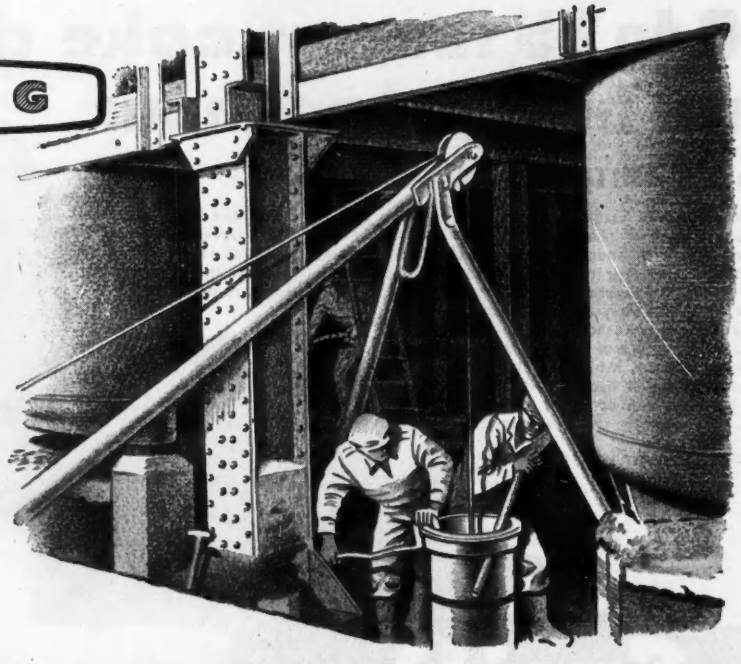

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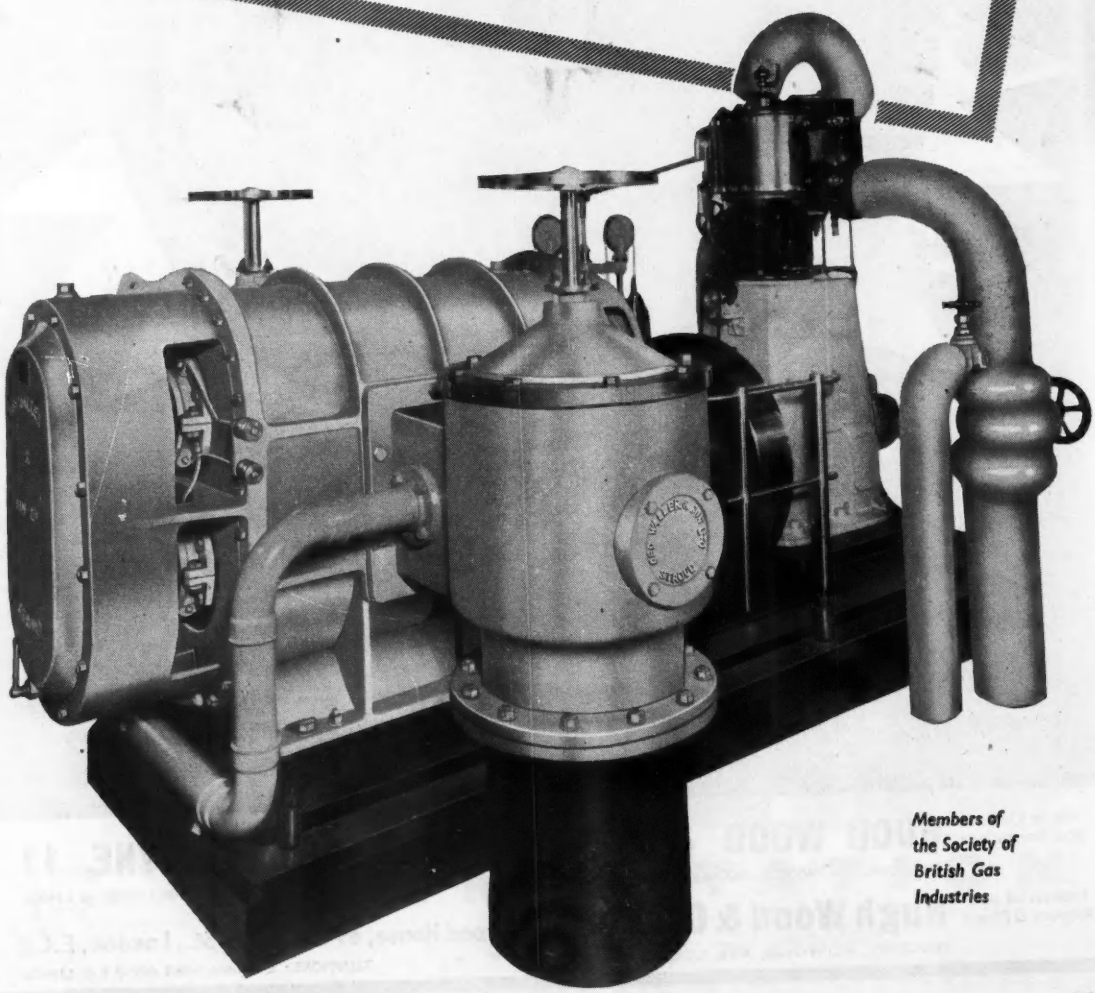

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Photograph of the 'Mushroom' caused by the Atom Bomb explosion at Bikini, 1949.

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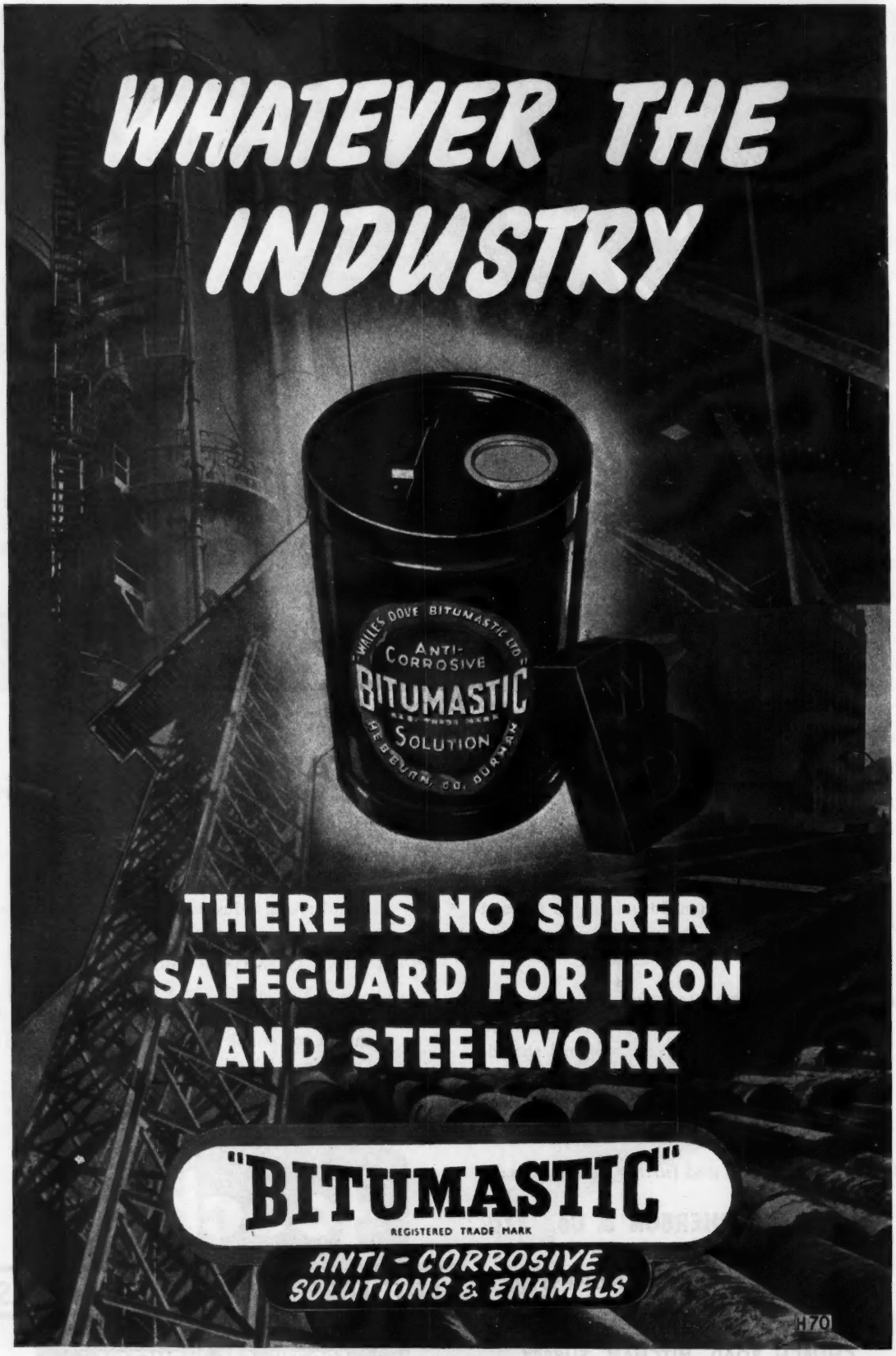

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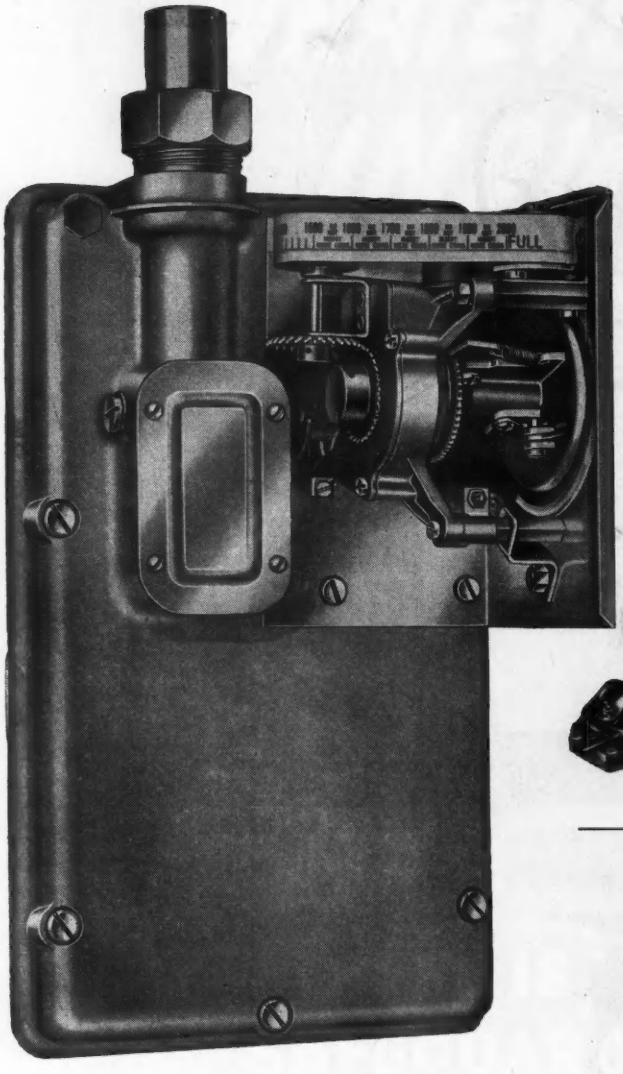

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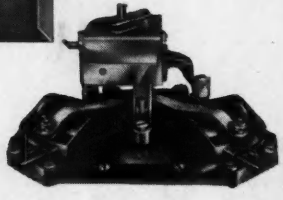

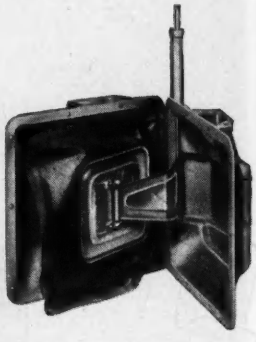

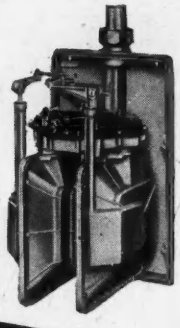

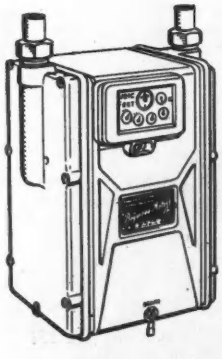

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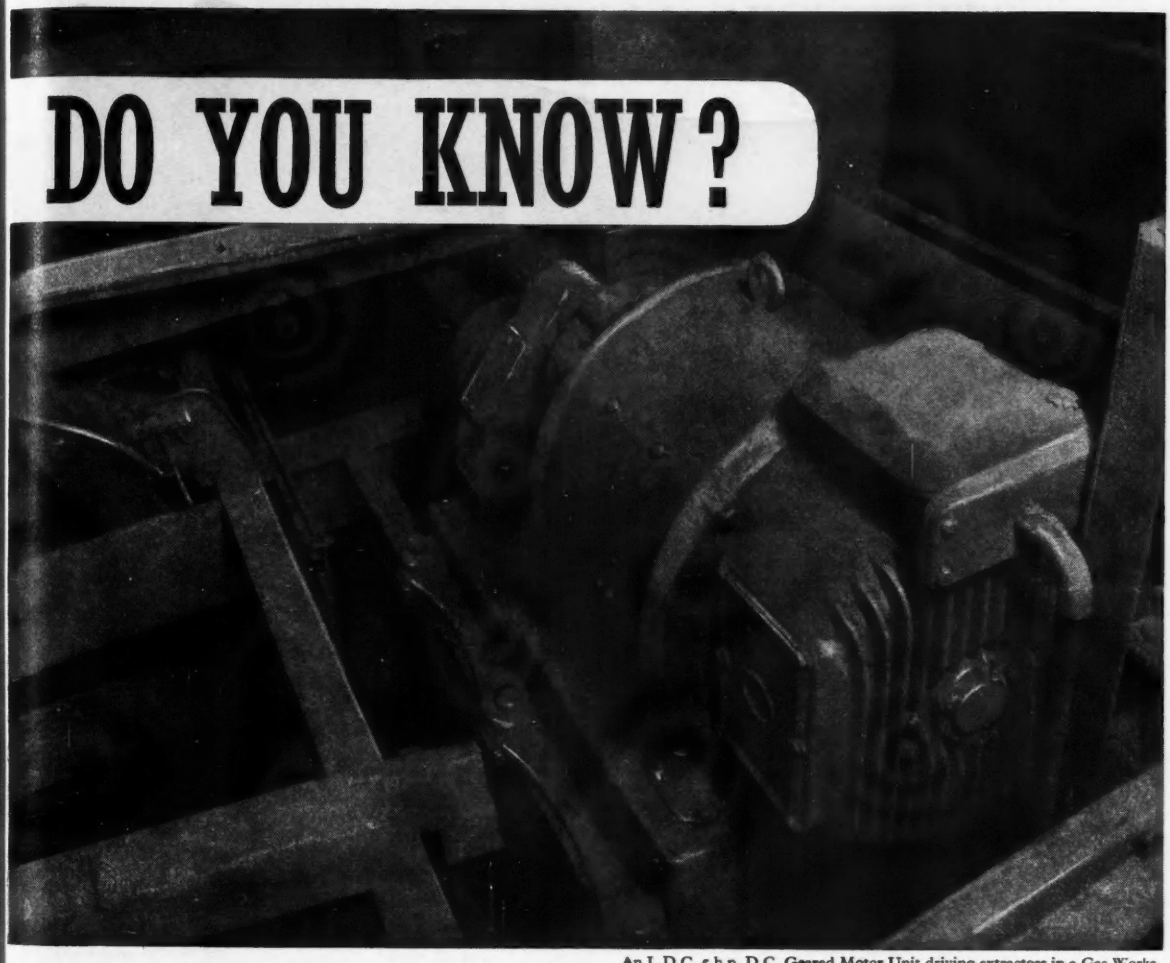

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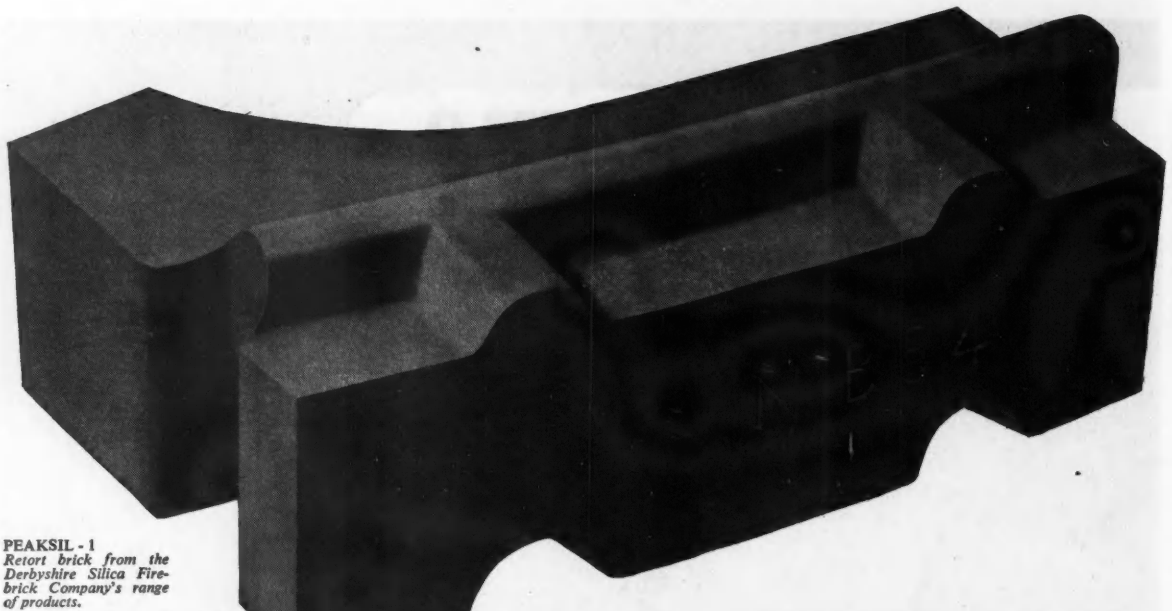

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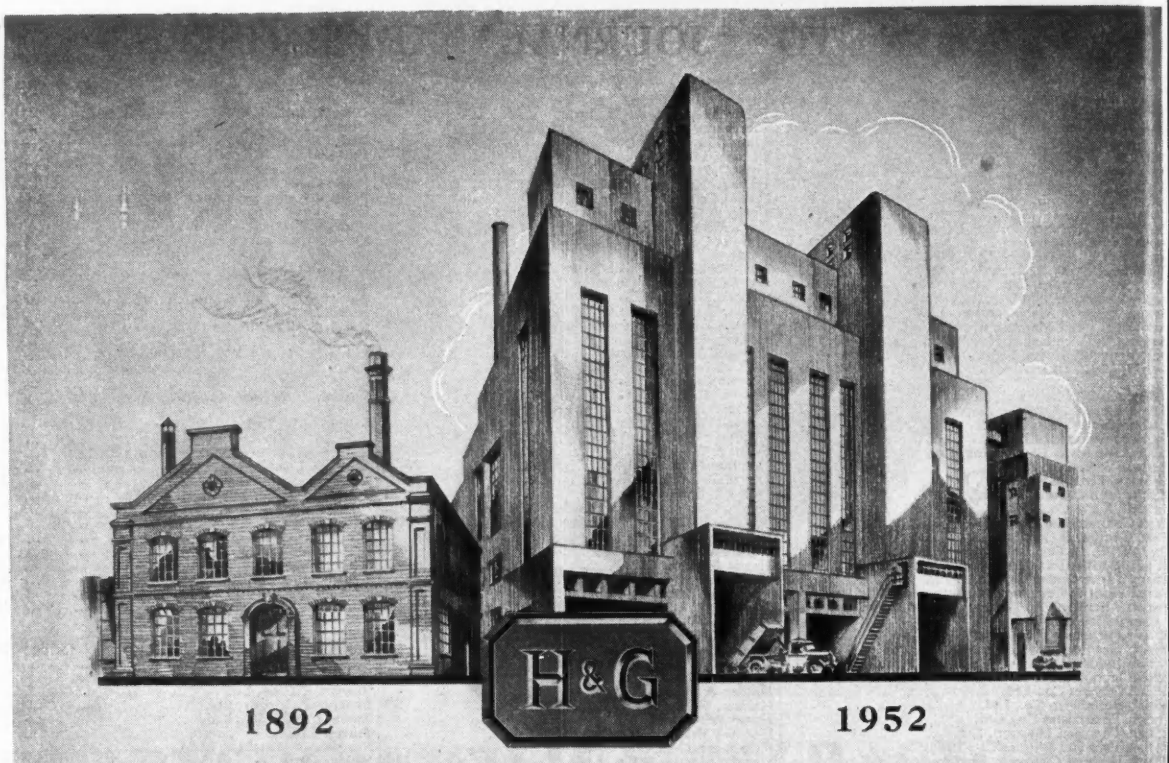

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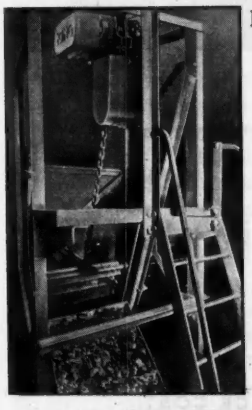

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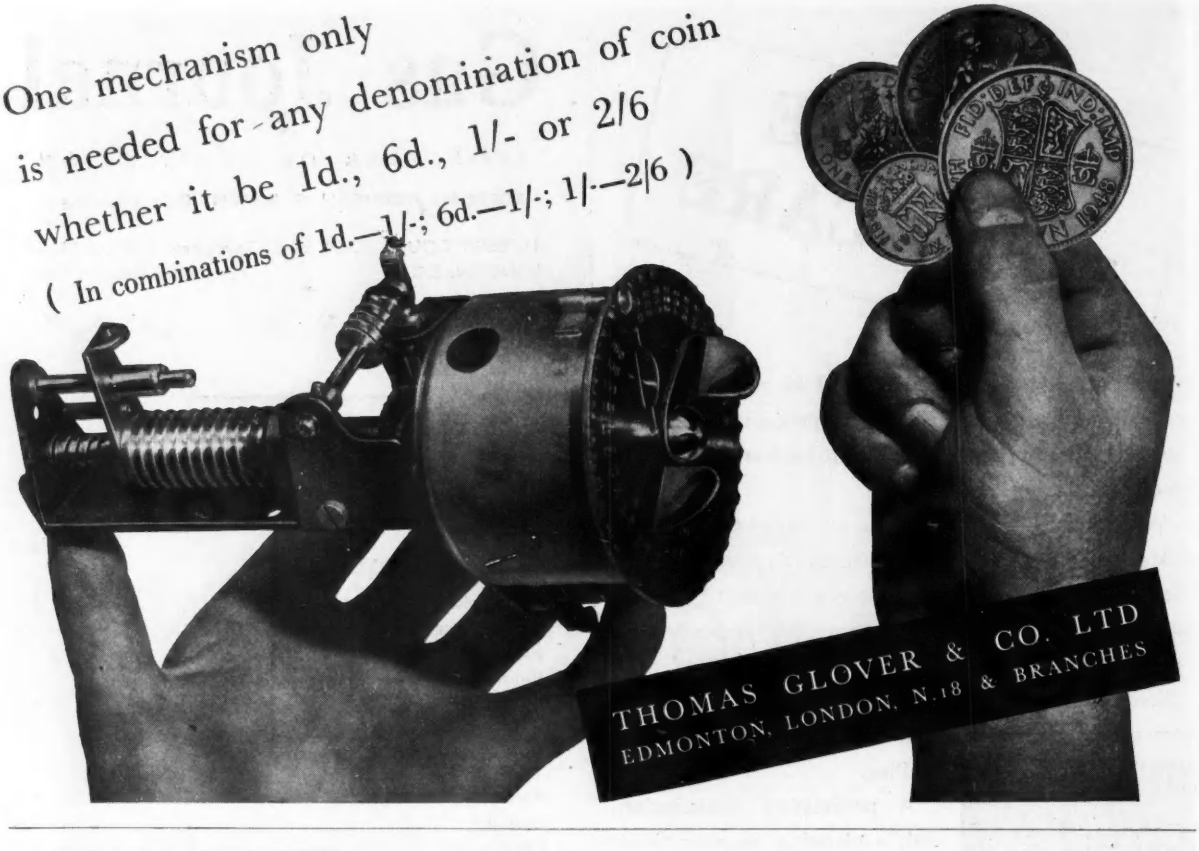

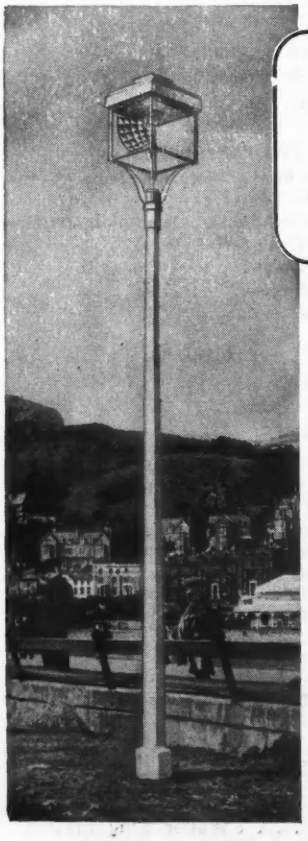

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GAS JOURNAL

VOL. 271. NO. 4650 104TH YEAR JULY 16, 1952

GAS IN THE EASTERN AREA

THE discussion of the Institution paper by Mr. E. O. Rose on gas manufacture and supply in the Eastern area was extraordinarily good, as indeed was to be expected when one has regard to the list of speakers, all of whom have vast experience of gas economics on a big scale and at least three of them under widely varying conditions at home and abroad.

Priorities for capital investment in the gas and other fuel industries may some day come to be considered by some over-riding authority whose decisions may be determined by a national fuel policy. Such an authority may well have to choose between economy of capital and economy of available fuel and particularly economy of coal. And it may well come to an order of priorities somewhat different from that suggested by Mr. Rose. It would agree with him, at any rate in the foreseeable future, in keeping his class 4 development to attract new business firmly at the bottom of the list of priorities. It would agree in keeping reconstruction and replacement of obsolete, obsolescent, and dilapidated plant in the first place, not only for the obvious reason that the sum total of plant capacity must be maintained but because coal economy, thermal efficiency, must be at a low ebb in such plant. It has been estimated that if all existing obsolete plant were modernised the total increase in production capacity would be of the order of 15%. But we suggest it would, or should, transpose classes 2 and 3 in the order of priority. The gas industry must meet the demands upon it for gas (in the first place) and coke with the least possible expenditure of gas-making coals. The net coal cost—*i.e.*, cost in terms of coal quantity—should, within reason, have priority over monetary costs.

Mr. Finlayson and Mr. Nicklin turned the discussion, more or less implicitly, on the question whether the calorific value of the gas distributed has been set too high, at any rate in the districts away from the shadow of the Metropolis. 'The coal/coke price ratio is the most important single factor in the economics of gas production!' Here we have a case where the price realised for coke is well below that paid for coal and where consequently the calorific value of the gas made should be as low as possible consistent with the limits of efficient gasification of coke whether in the retort or elsewhere. And in this connection, too, due heed should be paid to Mr. Finlayson's remark that, even with Durham coals, under comparable conditions there should be no such difference in the costs of manufacture between intermittent and continuous verticals as Mr. Rose implies. The table in the *Gas Journal Handbook*, 1952, p. 208, of comparative costs of production making gas at 500 B.Th.U. in the two types of plant with Yorkshire nuts and with Durham run-of-mine coals has been carefully re-calculated and shows that on the price assumptions there given there is very little in it. And with Yorkshire nuts, at all events, with such high coal prices relative to coke as those prevailing in East Anglia, gas at 450 B.Th.U. should be even cheaper than at 470 or 500 than is shown in the table on p. 206 of the Handbook. As Mr. Nicklin put it, the low return for coke in the Eastern area obviously indicates the need to utilise the coke produced with the most economic advantage, which is clearly to make as much gas as possible from the coke.

Of course all this is tied up with the coke requirements of the area, particularly in the less densely populated districts. The outstanding characteristic of the area is the sharp difference between the two suburban divisions, Watford and Tottenham, and those to the north and east, out in the country. The source of the coal supply, the cost and method of its transport to the several localities, are obviously the controlling factor in the siting of works and the method of gas manufacture to be adopted—as Mr. Rose has so clearly set out. The answer in regard to Watford and Tottenham remains in no doubt, but north and east it becomes a choice between rail and sea transport for Yorkshire or Durham coals while to the north-west there is the proximity of the Midland coalfields and the possibility of coke oven

gas generated on the coalfields. Mr. Greenwood spoke from his immense experience in the Rhineland. His own calculations supported the view that considerable economy in gas cost might be realised in this latter way, but there remained the difficulty of local coke supply. The proposal to supply Norwich and the surrounding and intervening districts from seaside manufacturing stations at Yarmouth and Lowestoft also indicates that administrators are taking very wide and bold views of the possibilities now in their hands as a result of integration under one control of gas supply over extensive areas.

It was natural too that oil gas and refinery tail gases should present themselves as solutions for peak load working and for certain small, isolated districts. There is, however, a case for small carbonising plants, for if coke should be consumed in those localities where it is produced, the converse is true—coke should be produced in the localities where it is to be sold. The alternative is to import coke, or 'specialised fuels' at what must be considerable cost.

GASWORKS AND LOCAL AMENITIES

MEMORIES of strong opposition to proposed gasworks extensions at public enquiries at St. Albans, Oxford, Worcester, and elsewhere are revived by the welcome statement in the annual report of Mr. W. A. Damon, Chief Inspector under the Alkali, Etc., Works Regulation Act, that by arrangement with the Gas Council his department is in future to be consulted at the blueprint stage on the building of new gasworks. Much has been done in recent years to remove the more serious objections from gas manufacturing stations, but the fact remains that complete elimination of all offensive emissions is impracticable, and that no gasworks can yet be operated without some disturbance of local amenities. Under the new arrangement, however, Mr. Damon's department is to be informed of all new gasworks building projects and will be given an opportunity of discussing plans with the responsible officials at an early stage, special consideration being given to the type of carbonising plant, method of coke quenching and subsequent handling, steam raising, siting of purifiers, coal and coke stocks in relation to dwelling houses, etc. Preliminary consultations have in fact taken place in connection with new works at Wrexham, Exeter, and Tingley, and there is reason to hope that such early consideration will result in a reasonably satisfactory compromise between the competing interests of the industry and of the general public.

The Chief Inspector's principal gas industry interest is concerned with by-products—ammonia liquor, sulphate of ammonia, and tar—in respect of all of which he records a continued trend towards the closing of the smaller works and the transfer of the processes conducted in them to larger works at which they can be operated more economically and effectively. The trend was especially noticeable in regard to tar works, where there was a further fall in the number of works registered—namely, 155, compared with 160 in 1950, 175 in 1949, 269 in 1939, and 326 in 1931. The fall is definitely due to the continuing tendency to concentrate distillation at large central installations. It is not due to a reduction in the amount of tar distilled. Actually, half as many works are coping with 50% more tar than in 1931. The report states that replacement of intermittent pot stills by continuous distillation units continued. The latter method possesses many practical and economic advantages, not the least of which, from the point of view of atmospheric pollution, is the uniform rate of foul gas evolution which is more readily dealt with in an efficient manner. The same tendency to concentrate the treatment of by-products in fewer larger works is noted by the Chief Inspector for Scotland, who records that three gasworks gave up tar distillation and one stopped gas liquor concentration. One small tar works has finally closed down; the larger works which remain operated without complaint during the year.

Registered works are becoming ever bigger and more complex and the tendency is to locate them in the less populated districts; hence more travelling time is involved and more time is required for the inspection of individual works, and the average number of visits which the inspectors have found it possible to pay annually to each registered works has fallen from four in pre-war years to three in 1951—a process which Mr. Damon says 'must now be arrested.' Both Chief Inspectors refer in their reports to their increasing activities in committees and in co-operation with other organisations, notably the regional smoke abatement committees, which are sponsored by local authorities, some also including domestic and industrial representation. Such a combination of interests results in problems being discussed in a friendly and realistic way which is more effective than a great deal of impracticable enthusiasm.

FUEL AND POWER DEBATE

THE fuel and power debate initiated by Mr. Alfred Robens, former Parliamentary Secretary to the Ministry of Fuel and Power, in the House of Commons last week was noteworthy for several reasons but chiefly perhaps for the fact that the achievements and the aspirations of all the fuel industries were frankly discussed without party political bias. Speaking as one who had been closely associated with them in a ministerial capacity Mr. Robens looked back on five years for coal, four years for electricity, and three years for gas under public ownership and claimed that on the whole they had done a good job of work. As Mr. Robens and the many speakers who followed him proceeded to analyse past successes and failures and to take a glimpse into the future, the gas industry came more and more into the picture, but not a word was said about either the first or second annual report of the Gas Council which it was long since understood was to be the subject of debate in the House. We have devoted some space on pages 140 and 141 to a summary of the report of the debate and need not go into details here. It should be put on record, however, that on this occasion of the first fuel and power debate

since the present Government came into power speakers on all sides of the House testified to the accelerated progress which the gas industry had been enabled to make since nationalisation. There was generous ministerial recognition of the difficulties which beset the industry at the present time on such matters as restriction of capital investment and shortages of materials both for the manufacture and distribution of gas. And there was a promise, albeit a somewhat non-committal one, that the report of the Ridley Committee would be issued 'quite shortly.' Back benchers had opportunity to put forward many suggestions not only for the good of the industry itself but for what they deemed the better functioning of the consultative and other machinery set up under nationalisation. Most of the information that the debate elicited was already common knowledge to those within the industry, but it was all to the good that it should receive the wider publicity of the House of Commons.

CONSUMERS' VIEWS

THE Coal Consumers' Councils—both Industrial and Domestic—are to be congratulated on publishing their fifth annual reports within nine days after the end of the year to which they relate—surely a record for any department of any of the nationalised industries. The immediate outlook for industrial coal supplies is better than for years past, according to the Industrial Consumers' Council, but the margin is still extremely fine, and it is urged that there should be no slackening of effort to improve the position still further. There is extended reference to the dissatisfaction felt by the carbonising industries with the principles adopted by the National Coal Board in its endeavour to rationalise coal prices. Formal complaints were lodged by the British Coking Industry Association and the Low Temperature Coal Distillers' Association of Great Britain. The Consumers' Council was aware that the Gas Council shared the dissatisfaction expressed by those two associations but was advised that the Gas Council was continuing to make use of existing machinery to discuss the matter directly by the N.C.B.

A categorical assurance was given by the N.C.B. members of the Consumers' Council that any carbonisation coal supplied for ordinary industrial purposes would carry precisely the same price as if it were sold for carbonising purposes. Where coals suitable for carbonisation are delivered to domestic consumers there may be some differences in price—some higher and some lower—under the domestic zone price scheme, but there was said to be no intention on the part of the Board as a matter of policy to reduce the price of domestic coal at the expense of industry. In fact, the intention of the Board was to further the re-allocation of coals, as occasion arose, to markets for which they are best suited. The Consumers' Council realised that if the Coal Board were to comply with the wishes of the carbonisation industries the whole of the price structure would have to be altered and it would be necessary to re-open the discussions which the Coal Board had had with representatives of other categories of consumers. In such an event there would be strong opposition from other consumers who would be called on to pay more for their coal than under the price structure adopted by the Coal Board. On a vote, from which the N.C.B. members abstained, a majority of the Consumers' Council approved the new price structure.

The coke shortage is still causing difficulties in industry, and because of uncertainty about adequate future supplies the Council considers it important 'that an agreed statement of the expected capacity of both the coke industry and the gas industry over the next few years, particularly in regard to hard coke, should be made available to all concerned as soon as possible.'

The report of the Domestic Coal Consumers' Council stresses the serious effect that the present inadequate domestic supply could have on the industrial drive. 'Domestic consumers,' the report says, 'cannot give of their best in the economic and industrial struggle for recovery unless they are relieved of the uncertainty of getting enough fuel to help to maintain their physical and mental vigour.' The avoidance of what could have been a disastrous situation last winter is attributed to the comparatively mild weather. The Domestic Consumers' Council attaches much importance to coke and other boiler fuels and welcomes the announcement of the working out of a broad outline of a scheme for improved coke marketing; it hopes to have an opportunity of commenting on the scheme before a final decision is taken. Quality and price of coke still cause complaints, says the report. As coke price is closely related to coal price there may be little prospect of reduction; it is all the more important, therefore, that better quality should be the constant objective of the gas industry, as the direct producer of the coke, and the National Coal Board who supplies the coal from which it is made.

The two Coal Consumers' Councils are doing a good job of work within the limits set by Act of Parliament. From the outset they have endeavoured to exercise common sense and not to be obstructive or to make themselves a nuisance. Unlike the consultative councils in the gas and electricity industries they do not welcome the public or the Press to their meetings. Sir Ernest Smith, Chairman of the Industrial Consumers' Council, says this is because they have encouraged the maximum of criticism across the table—criticism which, exposed to the glare of the public, might assume a party political significance that was never intended.

FOOD FAIR

AFTER many dreary years of controls and austerity it is refreshing—and also somewhat tantalising—to visit Olympia today, during the second British Food Fair, and see what Britain can eat (and, incidentally, drink). We have become accustomed in recent years to exhibitions bearing such titles as 'Britain Can Make It,' 'Britain Can Grow It,' and so forth—and it seems not inappropriate to call this one 'Britain Can Eat It' or at least as much of it as rationing allows. As we have indicated, this is the second

exhibition sponsored by the Food Manufacturers' Federation, the first, in 1950, having been visited by an average of 20,000 people daily and acclaimed a great success in bringing to the notice of the public the current activities and developments in the food manufacturing industry. This Fair is virtually the nation's food shop window; five acres of foodstuffs and appliances allied thereto are displayed.

In no more fitting environment could gas find a place, for it is our industry's proud claim that most of Britain's food is cooked by gas, either in the home or in the factory. In an exhibition such as this, where cleanliness and purity are carried to the last degree of perfection, it is not surprising that the standard of display craft is exceptionally high, with all the devices of expert showmanship brought into play. With this high standard the Gas Council's exhibit is fully in keeping and occupies a central position in the Grand Hall. So central, in fact, that the opening ceremony by the Minister of Food was conducted alongside it. The Gas Council stand was also honoured by a visit from the Queen, who paused for a few moments in the course of her private tour of the exhibition on July 4 to inspect the appliances set out. While the Gas Council has no 'free samples' to give away (like many of the other exhibitors), it makes up for this in large measure by giving away many useful household hints not only by means of the regular cookery and laundry demonstrations but in the section devoted to one-room living and the children's corner—both novel ideas which we have not seen so effectively portrayed before. The message of gas at this Fair is, in short, admirably summed up in the caption to the Gas Council's full-page advertisement in the official catalogue—'Mr. Therm Takes a Stand for Cleanliness.'

Personal

Mr. H. H. Montgomerie, C.B., O.B.E., former Under Secretary, Ministry of Works, has accepted an invitation to join the Board of Mackay Industrial Equipment, Ltd., of Feltham, in an advisory and consultative capacity.

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Mr. F. R. Head, J.P., A.M.I.I.A., has been appointed Manager of the new Lea works, Luton, of George Kent, Ltd. He was formerly Production Controller at the firm's Biscot Road works in Luton. The Lea works adds 63,000 sq. ft. to the factory floor area of George Kent, Ltd.

◇ ◇ ◇

Dr. J. G. King, O.B.E., D.SC., PH.D., A.R.T.C., F.R.I.C., has retired from the position of Director of the Gas Research Board on the occasion of the taking over of the work and assets of the Board by the Gas Council. He is now undertaking consulting work.

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Mr. J. J. Hambidge, Joint Managing Director of the British Vacuum Cleaner and Engineering Co., Ltd., has been appointed Chairman in succession to **Mr. H. C. Booth,** who has retired. Mr. Hambidge is already chairman of several of the company's subsidiaries, including B.V.C. Industrial Constructions and the Magneta Time Co., Ltd.

◇ ◇ ◇

Mr. L. G. Packham has been appointed Overseas General Manager of C. C. Wakefield and Co., Ltd. In this capacity, he succeeds **Mr. W. F. List,** who is now an Assistant Managing Director. Mr. Packham, who is 44, was previously Manager of the overseas division (branches) and has been with the Company for 27 years.

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Mr. William Tunmore, Sub-Divisional Manager of the Darlington division (Northern section), Northern Gas Board, has retired after 49 years with the gas industry. Mr. Tunmore was born at Whitby and after a time as Manager at Annfield Plain, joined the Bishop Auckland Gas Company. On nationalisation he was appointed Sub-Divisional Manager. Mr. Tunmore, who is a past President of the North of England Gas Managers' Association, is to be succeeded by **Mr. Harry Forrest,** Spennymoor.

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Mr. Leslie O'Connor, C.B.E., Director General of Carbonisation, National Coal Board, has been appointed Deputy Chairman and Director of the British Coking Association as from October 1. The appointment arises out of the recognition by the N.C.B., the iron and steel industry, and owners of coking plants of the urgent necessity for co-ordinating further the development of coal carbonisation in coking plants, and the consequent decision to strengthen the organisation of the British Coking Association, which for 12 years has represented the interests of hard coke producers.

Mr. J. B. Leaman, Coal Marketing Officer, East Midlands Gas Board, has been designated Deputy Coal and By-Products Officer as from July 1.

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Mr. R. H. Houstoun, Managing Director of the Thermal Syndicate, Ltd., retired on June 30. **Mr. F. J. Edwards** has been appointed Managing Director as from July 1.

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Mr. N. H. Greenway, M.B.E., Senior Industrial Gas Engineer to the Stretford and District Division of the North Western Gas Board, has taken up an appointment as Assistant Industrial Gas Engineer to the Wales Gas Board.

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Mr. G. Murray Burton, M.A., F.C.A., has been elected Deputy Chairman of the Malta and Mediterranean Gas Company, of which he has been Managing Director and Secretary for many years.

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Miss E. E. M. Halsey, A.C.I.S., Engineer's Clerk at the North Thames Gas Board's Bromley-by-Bow works, won first place in an examination based on a course of lectures on domestic and industrial fuel at the Sir John Cass College and conducted by the City and Guilds of London Institute in co-operation with the Institute of Fuel. Miss Halsey is the first woman to gain first place in this examination. At the Coal Industry Society's recent annual meeting, Lord Hyndley, former National Coal Board Chairman, presented Miss Halsey with her prize and offered to autograph the books she selects. Miss Halsey has been employed at Bromley for more than 24 years.

Obituary

Mr. C. Leslie Fry, Director of Thos. W. Ward, Ltd., Sheffield, died on June 26 while on holiday in the Scilly Isles, aged 52. Mr. Fry had been with the firm for 38 years. He was also joint managing director of Low Moor Best Yorkshire Iron, Ltd., joint assistant managing director of the Wolverhampton Steel and Iron Co. (1946), Ltd., and a director of Birchley Rolling Mills, Ltd.

Diary

July 21.—Eastern G.C.C.: Connaught Rooms, Kingsway, W.C.2, 2 p.m.

July 21.—West Midlands G.C.C.: Dudley Room, Queen's Hotel, Birmingham, 2.30 p.m.

July 31.—North Thames G.C.C.: Westminster City Hall, Charing Cross Road, 2.30 p.m.

News in Brief

A Reward of £50 has been offered by the Alliance and Dublin Consumers' Gas Company for information leading to the arrest and conviction of any bogus coin meter collector. Consumers have been advised to check their last collection docket and ask the collector to state from his records the date of the last collection and the amount paid, or to see the collector's card of authority.

Use of Calor Gas instead of electricity in new houses at Grantown-on-Spey has been recommended by Morayshire Housing Committee at Elgin. Making the suggestion, Mr. F. O. Stuart, Lossiemouth, said that by that action they would bring home to the North of Scotland Hydro-Electric Board that they were not prepared to pay high service charges. Mr. W. C. Marshall Smith, Grantown, said that pressure should be brought to bear on the Board to reduce its service charges. It should be the capital charge of the Board to carry electricity to the houses just as much as it was to build dams.

Over 2,000 Employees and Friends attended the annual sports meeting of G. A. Harvey & Co. (London), Ltd., on June 28. A well supported fun fair helped to create a gala atmosphere. During the afternoon, the Chairman, Mr. Sydney Harvey, accompanied by Mrs. Harvey, arrived to enjoy the show. Also present were Mr. and Mrs. G. C. Harvey and Mr. and Mrs. H. E. Cooper. Among the guests were the Mayor and Mayoress of Greenwich, Councillor H. Ingle, J.P., and Mrs. Ingle, Chief Inspector Miller, C.I.D., and Chief Inspector Mathews, of Blackheath Road.

Damages of £450 were awarded by a jury in the Court of Session on July 2 to Thomas H. Pryde, labourer, of Kelty, Fife, a former trombone player in Geraldo's orchestra, who claimed that, as a result of an accident at Kelty gasworks, he was unable to resume activities as a musician because he could not sustain instrumental playing for long periods. He sued the Scottish Gas Board for £1,500, and claimed that since falling into a 7 ft. hole he had been incapacitated for work and had lost £13 9s. 6d. in wages—£4 19s. 6d. as a labourer and £8 10s. as a trombone player. The Gas Board denied liability. Assessing damages at £500, the jury, who sat with Lord Strachan, held that Pryde was 10% to blame for the accident.

The First Traditional People's House to be completed in the London area has been officially opened by Mr. Harold Macmillan, M.P., the Housing Minister, at the Ealing Borough Council's estate at Northolt Park. Gas appliances installed by the North Thames Gas Board in two of the houses inspected by the Minister consisted of a 'London' cooker, a Ewart 75 sink water heater, and a Dean 927 wash-boiler—all in white finish. This estate on the old Northolt Park pony racecourse is expected to be completed in the next three years and will include more than 1,000 houses of varying design and size of types recommended by the Ministry, in addition to five-storey blocks of flats, shops, schools, and churches.

Hibberd, Son, & Burns Ltd., the Glover and Main agents for New Zealand, made a bold show with their display of 'Main' appliances at the recent Wellington Show and Industrial Fair. The stand, erected to a plan prepared by R. & A. Main, Ltd., Falkirk, attracted considerable attention and, said the organisers, resulted in favourable comment from the public and other exhibitors generally, and helped to make the fair one of the most outstanding industrial fairs ever to be held in Wellington. New Zealand housewives took a keen interest in water heaters, space heaters, and the Main No. 20 cooker.

Gas Price Increases.—After representation from Bury Council, the Association of Municipal Corporations has agreed to urge the Ministry of Fuel and Power to ask gas boards to consult local authorities direct before making increases in the price of gas for street lighting. In April the North Western Gas Board increased the price of street lighting gas from 9½d. to 11½d. a therm and added £710 to Bury's annual lighting bill. The council complained that it was not consulted before the increase. The Board replied that all increases were put before the Gas Consultative Council—representing all consumers, including local authorities and industry—before they were enforced.

The Eastern Gas Board has inaugurated the award of long service certificates to employees on completion of 25 years' service. Monetary awards accompany the certificates and a further certificate is to be presented on retirement. The first presentation of awards at Peterborough took place on June 20, when 13 employees received 25-year certificates from Mr. J. Hunter Rioch, Cambridge Divisional General Manager. Among the recipients were Mr. G. R. Buton, who has completed 45 years' service, and Mr. W. Pritchard, who has completed 42. There was a similar presentation at Wisbech on June 20, when awards were handed to nine employees whose service ranged from 39 to 26 years.

Belgian Plumbers' Visit

VISITORS from the Master Plumbers' Association of Liege were entertained on June 16 and 17 at the Neasden works of Ascot Gas Water Heaters, Ltd., and also at the laboratories of Ascot's associated company, Nash and Thompson, Ltd. The visit was arranged in conjunction with the Belgian agents of Ascot Gas Water Heaters, Ltd., Etabs. Guillaume Prist S/A, of Antwerp. The party, which arrived on Sunday evening, June 15, included the President, Secretary, and 32 members of the Association, together with three representatives of Etabs. Guillaume Prist, and Madame Duchesne, who is the wife of M. R. Duchesne, Principal of the Liege School of Plumbing. The Secretary of the Association, M. H. Lognay, is also editor of a leading Belgian plumbing journal.

On the Monday the party lunched at the Neasden works where they were welcomed to this country by the Chairman, the Earl of Limerick, K.C.B., D.S.O., to which the President of the Association, M. A. Begasse, made a suitable reply. In the afternoon, at their request, they were taken to Madame Tussaud's and later made a short tour of Central London by motor coach. In the evening they were entertained at the Trocadero.

On the Tuesday, they were taken by motor coach to visit Nash and Thompson Ltd., who act as the research department for Ascot Gas Water Heaters, Ltd. The morning was spent touring the laboratories and workshops and, after lunch, the party was taken by river to Central London and later disembarked by the Festival Pleasure Gardens, where they took dinner in the riverside restaurant. Later in the evening a small cocktail party was held to bid them adieu.

Australian Sulphuric Acid Plant

SIMON-CARVES (AUSTRALIA), PTY., LTD., an associated company of Simon-Carves, Ltd., of Stockport, has received a contract to build a large Simon-Carves Monsanto contact sulphuric acid plant at Port Adelaide to produce sulphuric acid from pyrites, of which abundant local deposits exist. The primary purpose is to provide sulphuric acid for the production of large quantities of superphosphate fertilisers for South Australia. The plant will be operated by a new Adelaide company, Sulphuric Acid, Ltd., on behalf of three superphosphate companies, namely, Cresco Fertilisers, Ltd. (by whom the contract was placed), the Adelaide Chemical and Fertiliser Co., Ltd., and Walleroo-Mount Lyell, Ltd. It will be possible to duplicate the plant, thus ensuring ample acid supplies for a future increased demand for superphosphate or for any type of chemical manufacture which may be started in Adelaide.

The plant will incorporate three Nichols Freeman flash roasters to produce sulphur dioxide gas from pyrites, and the gas will be treated in gas cleaning and cooling units. The acid-making plant will be a single unit with a capacity of 300 tons of sulphuric acid per day, and will be the largest single-unit sulphuric acid plant in the British Commonwealth.

The eventual value of the contract is expected to be about £A2,000,000. It will be carried out by Simon-Carves (Australia), Pty., Ltd., manufacture being undertaken partly in Britain and partly in Australia. Construction is to begin at once, and the plant will be in production in two and a half years.

GAS at the FOOD FAIR

During her private tour of the British Food Fair at Olympia on July 4 Her Majesty The Queen paused at the Gas Council's stand where she is seen above with Mr. R. S. Hinder (Press and Information Officer). Her Majesty showed a keen interest in the exhibits and asked a number of questions about the gas cookers displayed.

PARTICULAR emphasis is laid on health and hygiene in the Gas Council exhibit at the British Food Fair, Olympia, which shows how the use of modern gas equipment can protect health and ensure cleanliness in the preparation and storage of food, and at the same time bring comfort and leisure to the home.

Anything that takes the work of washing day is sure to capture the interest of the housewife and the new gas-electric washing machine, which heats the water and automatically agitates clothes in two to five minutes, is the subject of daily demonstrations, together with a gas drying cabinet.

Of particular interest are a miniature cooker, complete with oven, small compact hotplates, and grillers designed for the bachelor man and woman who want to prepare a quick meal or entertain in a simple manner. They are all portable and can be included in personal luggage when moving rooms. Their application is clearly indicated by a series of excellent photographs, which can be seen in our illustration above.

Children's Corner

A special section, with brightly coloured and pictured alphabet bricks, is devoted to the care of the child in the home, and to the important part hot water plays in the sterilisation of feeding bottles, napkins and utensils. The necessity for guarding the open fire, the hidden dangers of unwashed hands and the protection a refrigerator can give to food and milk are all shown in a practical manner.

A comprehensive display of the latest types of water heater includes a sink boiling water heater, which gives water at a temperature of 212°F. in 40 seconds, a large multi-point for a full domestic water supply, and a new combination set, comprising a lagged tank and circulator, one model of which will fit beneath the sink draining board.

We have visited Olympia on many different occasions and for many different events from circuses to scientific instruments and from cows to catering, but we have rarely, if ever, been more impressed by the whole atmosphere, layout, and decoration scheme than at this second British Food Fair—which we like to think of as the 'Britain Can Eat It' exhibition. In a show such as this it is only to be expected that the standard of displaycraft should be high, since absolute cleanliness and purity must be the keynote throughout. The Gas Council's

Beneath the symbol of Mr. Therm, the Minister of Food Major G. Lloyd George, opens the Food Fair at Olympia on July 5

stand is fully in keeping with this high standard, and while it has no 'free samples' to give away (like many other exhibitors) it makes up for this by giving away a multitude of helpful household hints by means of the regular cookery and home laundry demonstrations and in several other ways. The attractively laid out demonstration theatre seats over 40 persons.

Throughout the run of the exhibition (July 5-19) cookery demonstrations are being given daily, and include picnic fare, tea-time favourites, out of the ordinary salads and a new angle on pastry and quick savouries. Copies of the recipes are available at each demonstration.

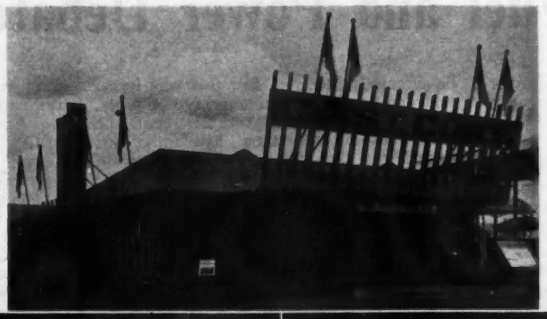
The stand, too, occupies a fine central position in the Grand Hall at Olympia—so central, in fact, that the opening ceremoney on July 5 was performed by the Minister of Food, Major Gwilym Lloyd George, from a dais right alongside, thus providing an unlooked for piece of publicity (as we show in the accompanying photograph). The stand was also honoured by a visit from Her Majesty The Queen, who paused for a few moments in the course of her private tour of the Fair on July 4 to view some of the gas appliances set out.

Each section of the stand carries its own message. The layout is simple but loses nothing in effectiveness thereby. Indeed, the story of each section is told almost at a glance without the eye being diverted or the brain confused by an over elaborate display of appliances—which is the secret of all good exhibition stands.

Useful Publicity

An unusual feature is the full page which the Gas Council has taken in the official catalogue in the section one might, perhaps, describe as 'special attractions'—which is a very useful piece of publicity for the industry. After a brief explanation of what the Gas Council is and does, the article goes on to describe what gas can do through the medium of the appliances displayed on the stand. This page is not an advertisement in the accepted sense of the word, which makes its inclusion all the more valuable. There is, indeed, a Gas Council advertisement in the catalogue as well—actually the very first page—and we cannot do better than sum up the gas display by borrowing the caption from that advertisement—'Mr. Therm Takes a Stand for Cleanliness.' We congratulate the Gas Council on a very noteworthy effort.

and at the ROYAL SHOW



Cooker Section *THE GAS PAVILION* *Coke Section*

MR. THERM was at the service of agriculture in a dual capacity at this year's Royal Show at Newton Abbot. In addition to the Gas Council stand, on which were shown all the latest appliances of the gas and coke industry for the farmer (and the farmer's wife), four restaurants at the Show were fully equipped with gas appliances for cooking and water heating, supplied by the South Western Gas Board.

The Gas Council stand was in four main sections. One featured appliances for the dairy and for commercial uses and two dealt with appliances in the home—one for gas and one for coke appliances. The domestic gas section included a demonstration kitchen in which demonstrations of cookery and home laundry were given each day by home service advisers of the South Western Gas Board. Special attention was given in the cookery demonstrations to fruit bottling and other activities of interest to the rural housewife.

Crop Drying

The fourth section of the stand was a large open air exhibit featuring coke equipment for grain and grass drying, and gas and coke appliances for greenhouse heating.

The Slade Curran grass dryer was shown as a working exhibit. Its output is between 1 and 1½ cwt. an hour. It maintains a constant drying temperature and requires charging at intervals of four hours only. This dryer is eminently suitable for small and medium sized farms. For larger farms there is the I.C.I. grass dryer, a model of which was on view. This was shown with a semi-producer coke furnace, and can give up to 4 cwt. of dried grass an hour, or up to 380 tons a year.

For grain drying, an N.I.A.E. platform type of dryer, operating with a Gas Council coke heating unit, was on view. It operates at a higher temperature than the usual platform dryer, and has a moisture removal rate of between 1.5 and 1.7% per hour when drying 40 1-

FOR FARM and FARMSTEAD

cwt. sacks of grain. The coke heater will operate for five hours without attention, maintaining a constant temperature for that period. The cost of dryers of this type, including erection cost, is about £300.

The section featuring dairy equipment included pasteurisers and steam raising boilers, and a new feature for the Royal Show exhibit was a selection of up-to-date catering equipment, including appliances similar to some of those in use in the Show restaurants.

There was, however, a curious omission from the list of appliances displayed. There was apparently nothing for the poultry breeder. This omission is all the more surprising in view of the special point which is made of this subject in the latest edition of the Gas Council's *Gas on the Farm* (which we reviewed in our issue of July 2). As we then remarked, the reliability and absolute precision of temperature make gas the pre-eminent fuel for incubators and brooders.

The spaciousness of the Gas Pavilion at the 'Royal' was particularly apparent and the comprehensive display of almost every conceivable kind of gas apparatus left little to be desired. Whether the rather unusual motif surmounting the main entrance was deliberately intended to resemble, from a distance, an outsize buckrake we do not know; but there was general agreement that the Gas Pavilion was one of the finest efforts in the 'trade' section of the Show.

Wise Decision

Despite the absence of the cloven-hoofed entries (owing to the foot and mouth restrictions) the attendances though naturally not as good as in other years were far from poor, and the number of visitors to the Gas Pavilion fully justified the Gas Council's decision to continue its participation in this—the greatest—agricultural event of the year.

This is agriculture's biggest shop window, and it is fitting that gas should continue to have a conspicuous place in the window of Britain's first and largest industry, inasmuch as its contribution to that industry is increasing year by year. We have maintained before, and shall continue to maintain, that there are few, if any, media more valuable for gas displays than these big agricultural shows—drawing as they do thousands upon thousands of visitors from every walk of life and from town and country alike.

Fuel and Power Debate

THE Minister of Fuel and Power must have felt gratified that the first full-dress debate since he took office on the industries for which he is responsible should have been marked by the almost complete absence of 'sparks' which normally fly around the Chamber when nationalisation is under discussion. There seems to be some evidence, indeed, to support the feeling that fuel and power, more particularly coal, are being lifted out of the acrimonious and clogging influence of the political arena. To quote Mr. HAROLD NEAL (Bolsover), we cannot recall an occasion when congratulations have been so mutual and the exchanges so felicitous. The importance attached to the subject by hon. Members was also reflected in the time they devoted to it. It occupied them for more than 6½ hours on July 7.

The debate took place in Committee on a Supply Day and was introduced by means of one of those Parliamentary gymnastics which will ever remain a mystery to all but the closest students of that eminent authority on Parliamentary procedure, Erskine May. In this instance the Motion before the House was that a further sum not exceeding £25 be granted to Her Majesty towards defraying the charges for certain Services connected with fuel and power during the current year. At no point during the lengthy debate was it revealed precisely why Her Majesty needs this comparatively modest sum, and hon. Members of all parties were quite content to ignore the strict subject of the motion, trusting, we suppose, that the £25 would be wisely spent.

A Good Job of Work

Mr. ALFRED ROBENS (Blyth), Parliamentary Secretary of the Ministry of Fuel and Power in the previous Government, opening the debate, said he had no doubt his successor would be more than eager to give an account of himself as this was the first time there had been a debate on fuel and power while he had held his office. They could look back now upon five years for coal, four years for electricity and three years for gas under public ownership, and he believed that on the whole they had done a good job of work and that credit must be given to all those, at all levels, who had contributed to the success of those industries. They had seen these great industries drastically change their form without serious industrial upsets as a result of good personal relations.

He went on to speak of some of the 'outstanding achievements' of the fuel and power industries in carrying out the charter under which they were set up. Turning to gas, Mr. ROBENS asked: 'Can the Minister assure us that the shortage of capital investment is not preventing the gas industry from getting on with its expansionist programme?' One of the most valuable advantages arising from nationalisation of the gas industry, he went on, was the ability to construct gas grids, with the consequent savings to be effected thereby. But this was being retarded because of the shortage of pipes. Indeed, it was only recently that the Chairman of the East Midlands Gas Board said that deliveries of pipes were so behind that many new houses would be finished and occupied before gas could be laid on. He estimated that his Board's requirement for steel this year was 21,680 tons, but it appeared that its allocation would be only 6,600 tons—and this was only one area board among many. This was very serious, said Mr. Robens, who went on to ask how the gas industry would be placed for supplies of pipes and steel for the development of carbonising activities.

IN PARLIAMENT

Industry urgently needed greater gas supplies—particularly those engaged in re-armament. In Birmingham and the Black Country 78 requests for industrial supplies, each exceeding 4 mill. cu.ft. a year and aggregating 4,517 mill. cu.ft., had to be refused. A similar story could be told of many other areas. What was the Minister doing about this? It was, indeed, fortunate that the industry was nationalised when it was, because, despite the difficulties, it had made some remarkable economies and had been able to improve its efficiency. Scotland was a case in point, where integration had enabled the Gas Board to link up and merge a number of undertakings. Seven works had already been closed and 15 more were to be closed when the present schemes which had been approved were completed.

The economies of this linking up were obvious, said Mr. Robens. In the Eastern area a capital cost of some £98,000 had been avoided and two villages en route which had not previously had a supply would benefit by a new link. In Sheffield it had been necessary to restrict the supply to industrial consumers for three years. A connection of only some 500 yds. of main had connected Rotherham with Sheffield, with the result that on the maximum day more than 6 mill. cu.ft. were used above the maximum output before vesting day.

In South Wales two major schemes of the eastern and western gas grids were well under way, and, in co-operation with the N.C.B., the gas from the new Nantgarw coke ovens would flow into the eastern grid. Already it had been possible to cease production at four works and to curtail it at others. These were a few examples out of many proving the advantages of an integrated industry.

Turning to the experiments in the use of butane, Mr. Robens said the gas industry could not be accused of lack of enterprise. It had always been said that publicly-owned undertakings such as these would not have real enterprise and that it needed private ownership to have real enterprise; but the fact was that the Wales Gas Board must get a great deal of credit for the first large-scale experiment in the use of butane—a product in this case from the Llandarcy refinery of the Anglo-Iranian Oil Company. The results of this pioneer experiment (see *Journal* for April 30) had been made available to all other gas boards by the Gas Council so that the whole industry would be advantaged. Whitland was only a small undertaking, supplying about 240 consumers; but it normally consumed about 538 tons of coal a year, which would now be saved.

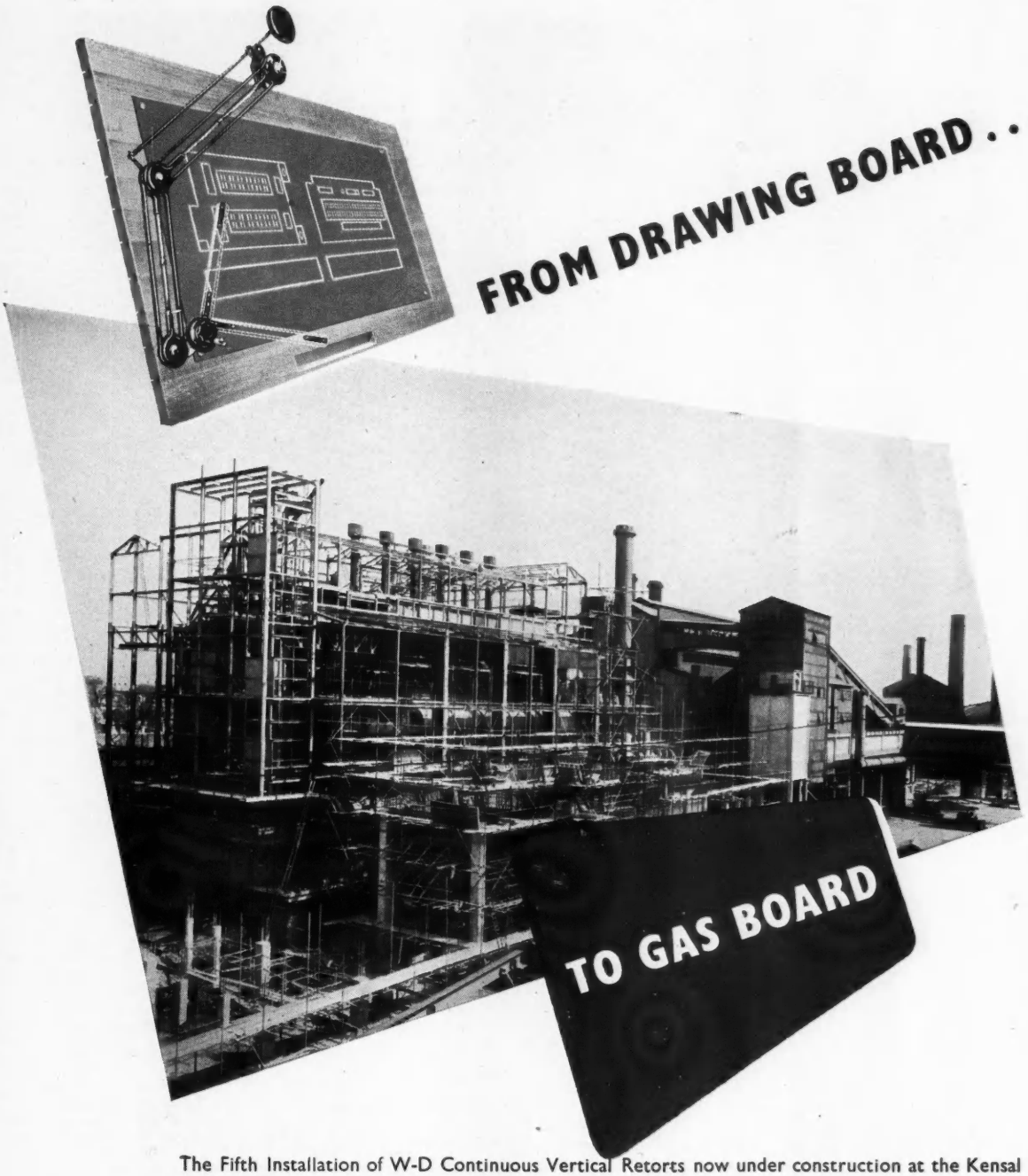
Mr. GEOFFREY LLOYD replied to a number of Mr. Robens's points before the debate continued. He remarked in passing that his Department had received requests from over 100 firms for the form of application for loans in respect of fuel saving equipment. Ten forms had been returned for loans amounting to £86,000—which was rather encouraging for such a very short space of time.

Turning to the gas and electricity industries, Mr. Lloyd said these did not, in the main, contribute directly to the balance of payments; but they did make a very powerful indirect contribution. Anybody who knew the metal industries of the Midlands, for example, would appreciate what an enormous part gas played in them. Also, when considering the gas and electricity industries they entered the field of fuel utilisation in its most massive aspect. These two industries together used over 60 mill. tons of coal a year—and here it was satisfactory to note that the drive for fuel efficiency was being carried on ceaselessly and successfully. Newer gasmaking plants were more efficient, and experiments were being carried out on complete gasification, which had the advantage of a wider range of coals being used. Experiments were also being made on the gasification of fuel oil, which linked up with the great increase of home refineries and produced a gas of equivalent thermal value at much less capital outlay than carbonising plant.

Importance of Gas Grids

As Mr. Robens had remarked, both electricity and gas had their grids. The electricity grid was much larger and better known; but not enough attention had been paid to the importance of the gas grid, which was first developed in this country in South Yorkshire before the war and was now springing up in all areas of the country. It had the advantage of being able to link up with coke oven gas and, they hoped, with surplus oil refinery gas. What was very important was the idea now being discussed of linking up the Sheffield-Nottingham area and the Birmingham area by a gas grid across the Midlands. Other research was concerned with underground gasification with the object of utilising about 1,000 mill. tons of coal which was so bad in quality or so difficult to work that it could never be mined by ordinary methods. Already two schemes had been tried out and both had succeeded in obtaining thermally useful gas in a form suitable for driving an engine for the purpose, for example, of making electricity.

(Continued on p. 141)



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In the background are the three earlier installations each of Downward Heated Retorts with coal carbonising capacities of 100, 120 and 200 tons of coal per day.

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Mr. Lloyd gave some encouraging news about coal production. Instead of the anticipated fall of 10,000 in manpower in the mines it had risen by 23,000 since last November, following on which production was up—though not as much as they would like—stocks were up still more, and exports were up still more than that. The latter would bring in about £60 mill. in foreign exchange instead of £30 mill. last year.

Colonel RALPH CLARKE (East Grinstead) paid a handsome tribute to the gas industry by remarking that in its quiet unobtrusive, solid way it had in the last few years since nationalisation, as for many years before, done an immense service to all those who used gas. There were two reasons for that. One was that it was working under a better Act than either the coal or the electricity industry. It was the third of the series and the one which received the most attention. There was another thing which had given gas some advantage. It was that whereas when the coal industry was nationalised there was a wholesale elimination of directors, as a result of which administrators in many places today had to be found from among the men who should really be working as engineers—and the same was true for different reasons in the electricity industry—what one might term the brains behind the gas industry had remained with it.

Consumer Representation

Mr. MICHAEL STEWART (Fulham, East) carried the debate into the field of consumer representation and added one or two suggestions (and criticisms) to those brought out in the debate on the subject on May 30, which was reported in the *Journal* for June 18, page 771. The machinery of consumer representation, he said, was used far too little and in far too haphazard a manner. The chairmen of consultative councils, which were mainly supposed to represent consumers' interests, were in fact *ipso facto* members of the board, and it was doubtful if they could properly fulfil the two functions. By making them members of the board, the latter, which was apparently the body which should be subject to criticism and examination, cast its shadow over the council, which ought to stand up to it. Again, the secretary of the council was an employee of the board, and it was doubtful whether he could wholeheartedly help the council in any job of vigorously criticising the board's policy.

Then, sometimes, when the area boards were subjected to criticism by the consultative council, they replied by making use of the device commonly known as 'blinding them with science'—that was to say, by producing a number of technical objections to what the consumer wanted done, which the consumers' representative was not technically capable of answering. A man or woman might be a very good representative of the consumers, and might know just where the shoe pinched if the gas and electricity industries were not properly run, and might be very competent to voice consumers' complaints—but might not know much about the technicalities of the industries. Therefore, Mr. Stewart thought there ought to be technical advice to the members of consultative councils.

He went on to suggest that the district committees should be manned by members of local authorities and should meet not in the board's premises but in the town hall. They should try to create the feeling among citizens that they could go to their own town hall with their complaints. When one went into the showrooms one might find there a list of the members of the district committee and, if one was fortunate, one might find not only their names but their addresses—and perhaps the address of the secretary. In others one would find no information at all. It should be the policy of the industry to do its best to make known to the public the names and addresses of the members of the district committees.

Knowing the Reason

The showroom employees, too, should be encouraged to acquaint themselves with the kind of questions which they were likely to be asked by the public so that they could answer them. He instanced the example of the consumer who came into the showroom with a question such as: 'Can I have a meter into which I can put sixpences as well as shillings?' Not only was the answer 'No' but no one could say why the answer was 'No.' Consumers would not mind the answer being 'No' if there were a good reason for it and the reason were explained to them.

Then, from time to time the gas and electricity industries produced very beautiful brochures describing various aspects of the industries. Mr. Stewart always read them with much interest, but he sometimes wondered whether, if there were a little less rather elaborate public relations of that kind and a little more making sure that the girl in the showroom could answer a simple question from members of the public, they would not get a better relationship between the public and the industries. He also advocated conferences between consultative councils both from different industries and different areas so that the ways in which they worked could be compared. This would have the advantage of focusing a good deal of public attention on a matter which at present did not arouse the interest among the general public that it ought to arouse. He further suggested that the working of the whole scheme of consultative councils might come under the review of a Select Committee of the House.

It was common ground among a very great many of them, said Mr. Stewart, that these industries ought to be publicly-owned. How could public ownership be most efficiently managed? The Opposition certainly were not going to commit themselves to the idea that the provisions of the Act as it was passed were infallible, permanent, or unchangeable and could never be improved. What was really wanted was to turn ineffectual grumbles into constructive criticisms—and if the machinery provided could be improved in this way, it could do just that thing.

Gas Pipe Blockage

Most of the remainder of the debate was devoted to the coal industry, on the rather flattering assumption expressed by one Member that if coal supplies were adequate and reasonably priced the other two partners in the fuel and power industries, gas and electricity, could look after themselves. In replying to the debate, however, the Parliamentary Secretary (Mr. L. W. JOYNSON-HICKS) had a word or two to say about capital investment for development with particular reference to steel. The situation was an inherited one, he observed; but the Government were grappling with it. With regard to gas pipes, he admitted that there was a 'blockage in delivery.' What they were doing in this connection was to have a special review of the orders which had been placed in order to determine the priority necessary for the most urgent cases. That was a practical step to meet the immediate needs of the situation.

N.W. SALES CIRCLE VISITS HOWARTH'S

SOME 300 members of the North Western Gas Board Salesmen's Circle from the Manchester, Bolton and Bury-Rossendale groups visited the Nelson Square Works of G. L. Howarth & Co., Ltd., on the evening of June 25.

During their tour of the up-to-date factory the members saw the well-known 'Rapid' washing machines in course of production, together with other of the firm's extensive range of wash boilers. After the inspection, the visitors were entertained to buffet refreshments, when Mr. J. Wilson (Manchester Group General Manager) thanked the Directors of the firm for their hospitality, to which Mr. A. Kennedy (Sales Manager) responded. In the accompanying photograph Mr. Wilson is seen second from the right and Mr. Kennedy second from the left.

More Tar Distilled in Fewer Works

Reports of the Chief Alkali Inspectors for 1951

MR. W. A. DAMON, Chief Inspector for England and Wales, and Mr. E. A. B. Birse, Chief Inspector for Scotland, have presented to the Minister of Housing and Local Government their reports on the work during 1951 in carrying out the provisions of the Alkali, etc., Works Regulation Act, 1906, and in the reduction of atmospheric pollution caused by industrial processes. The combined reports constitute the 88th of the series under the Act and previous legislation. Works registered under the Act in England and Wales numbered 971 (against 977 in the previous year) involving the operation of 1,773 processes (compared with 1,775). For Scotland the corresponding numbers were 74 works, a decrease of five, and 111 processes, a decrease of six.

In his section on coke ovens Mr. Damon records that two new batteries were completed and put into operation. One, in an area previously free from heavy industry, was wisely provided with devices to minimise the emission of smoke and fumes especial attention being paid to prevention of emission of green gas during charging. The other new battery, in common with an older battery with which it is associated, is not provided with special devices for preventing discharge of green gas and owing to the low volatile content of the coal used and the necessity of maintaining the calorific value of the gas the ovens are charged off the main. The ovens are, however, provided with the customary fifth charging hole and it is possible that a second gas collecting main may yet be installed. A third battery is projected at the same works and it is expected that this at least will incorporate double mains and aids to quick charging. Construction of a new coke oven battery for the National Coal Board is proceeding and completion in 1953 is scheduled.

Referring to low temperature carbonisation Mr. Damon says the main problem is to prevent smoke emission during charging and discharging of the retorts, and this has unfortunately remained unsolved. In his report for 1950 he referred to a scheme that 'seemed promising' which involved the making of a curtain of steam across the retort head during charging and discharging operations. The scheme proved unworkable in that the steam slits constantly blocked and it was found impossible in practice to keep them clear. Removal of steam and grit from the hot fuel discharged from the retorts was practised at another works, and it was proposed to extend the practice, which effectively improves the low level conditions, to all retorts at both works.

Several new plants were commissioned for the production of concentrated ammonia liquor much of which has subsequently been converted to sulphate of ammonia at central works. Operation of the Claus kiln attached to the ammonia plant at one gas liquor works was erratic and unsatisfactory, being rendered more difficult by reason of the varying volume and composition of the gases to be treated in the plant. The process was interrupted frequently and for long periods for repairs to the kiln and chambers and for replacement of deteriorated catalyst. When in use a recovery of approximately 80% of the sulphur carried by the waste gases was attained but difficulty was also experienced through the presence of residual hydrogen sulphide and/or excessive sulphur dioxide in the tail gases from the kiln. Scrubbing of the tail gases with ammonium sulphide was begun early in the year and was found to provide effective absorption of both hydrogen sulphide and sulphur dioxide. Development of the method was delayed by mechanical breakdowns and a tendency for the scrubber to choke.

Statistics relating to the production of ammonium salts furnished by the Minis-

TABLE II.—TAR DISTILLED AND PITCH PRODUCED—*Tons*

	England and Wales 1951	England and Wales 1950	Scotland 1951	Scotland 1950
Tar distilled originating at:—				
Gasworks	1,509,400	1,386,600	204,730	193,510
Coke ovens	868,600	839,400	43,510	44,810
Other works	70,900	62,800	2,330	1,830
TOTAL TAR DISTILLED	2,448,900	2,288,800	250,570	240,150
Distilled or dehydrated to refined tar	575,100	556,800	92,410	83,540
Distilled to pitch	1,873,800	1,732,000	158,160	156,610
Gross pitch production	984,000	932,700	76,350	74,230
Pitch oiled back	404,700	386,700	16,780	21,400

TABLE I.—AMMONIA

Tons. Produced at Registered Works and Government Factories

From	Salts of Ammonia expressed as 25% NH_3		Concentrated Ammonia calculated to 25% strength	
	Scotland	England and Wales	Scotland	England and Wales
Gasworks liquor	8,020	104,000	4,010	64,700
Coke oven liquor	12,660	185,700	250	25,100
Shale works liquor	16,680	—	—	—
Synthetic processes	11,420	949,000	184,220	1,431,200
TOTAL	48,780	1,238,700	188,480	1,521,000

Note.—Much of the concentrated liquor was subsequently converted to salts. The total of salts plus concentrate is therefore greater than the net production of ammonia.

try of materials appear in Table I together with figures collected by the Chief Inspector for concentrated liquor. A further decrease in the number of sulphate of ammonia works registered reflects the tendency to centralise production in fewer but larger plants. Operation was reasonably satisfactory with adequate provision made for the avoidance of escapes and the proper treatment of foul gases. There were, however, certain exceptions. The spent condition of the oxide in one of the purifiers resulted in the slip of foul gas through it. At another works the condition of the purifier was unsatisfactory and at a third a leakage was detected from a faulty spray trap.

Figures from tar works shown in Table II are based on statistics from the by-products branch of the Ministry of Fuel and Power. There was again a fall in the number of works registered—*viz.*, 155 compared with 162 in 1950, 175 in 1949, 269 in 1939, and 326 in 1931. Replacement of intermittent pot stills by continuous distillation units has continued. The latter method possesses many practical and economic advant-

TABLE III.—SULPHURIC ACID

Tons. Calculated to 100% strength

Excluding Government plants except those producing for trade purposes

	England and Wales 1951	England and Wales 1950	Scotland 1951	Scotland 1950
Production	1,423,000	1,570,000	156,000	206,000
Proportion of plant in use %	81.2	92.7	61.6	81.5
Proportion made %:—				
in chamber plant	34.4	34.3	69.7	58.8
in contact plant	65.6	65.7	30.3	41.2
Raw Materials Used, tons:—				
Pyrites	127,000	126,000	70,000	68,000
Sulphur and H_2S	252,000	318,000	18,000	37,000
Spent oxide	216,000	181,000	12,000	11,000
Zinc ores	159,000	176,000	—	—
Anhydrite	178,000	185,000	—	—

(*Concluded on page 144*)

Manchester and District Section—I.G.E.

CHAIRMAN'S DAY AT YORK

MEMBERS of the Manchester and District Section of the Institution of Gas Engineers spent an enjoyable and interesting day when they visited York on the occasion of Chairman's Day, July 4. The large number of members who travelled to York in support of their Chairman, Mr. A. McDonald, full time member of the North Eastern Gas Board, indicated that the choice of venue was a popular one, and indeed a significant one, not only because it happened to be Independence Day, but because it was the birthday of their Chairman.

By invitation of the Chairman and members of the North Eastern Gas Board, the company were entertained at lunch in the Georgian Assembly Rooms which have been recently restored, decorated, and furnished by the City Corporation at a cost of £30,000.

Dr. R. S. Edwards, Chairman, North Eastern Gas Board, in proposing the toast of the City of York and the guests, said in the words of his late Majesty King George VI, 'the history of York is the history of England.' Referring to the age and beauty of the city's buildings, Dr. Edwards said he was interested to read that York Minster had the finest Gothic arch in the world; this was high praise indeed. Continuing in lighter vein, Dr. Edwards said the York gasworks retort house was over 100 years old, but they were *not* very proud of it. It was not scheduled as an ancient monument, and they were hoping to pull it down as soon as they could.

The Chairman of the Section, Mr. A. McDonald, with Dr. R. S. Edwards, Chairman of the North Eastern Gas Board, and Mr. A. Henshall, Deputy Chairman of the North Western Gas Board.

Many Notable Guests

In welcoming the guests, Dr. Edwards said they were pleased to have the company of the Deputy Lord Mayor, Alderman J. H. Kaye, and also the Deputy City Engineer and Chief Constable. Their guests also included a good representation of former Directors of the York, Harrogate Group of Gas Companies. Their presence was a mark of affection for the Chairman who was formerly Director and General Manager of the Group. He was also pleased to welcome Colonel W. M. Carr, Mr. H. E. Bloor, Mr. Potter Kirby, Major Kitson and Mr. Seaton, and a good representation of plant manufacturers, including Mr. B. C. Morton; and also the Technical Press, represented by Mr. Clifford A. King, of the *Gas Journal*. Dr. Edwards also welcomed Mr. A. Henshall, Deputy Chairman, North Western Gas Board, and Councillor C. E. P. Stott, Chairman of the North Western Gas Consultative Council.

Alderman Kaye, responding to the toast, expressed regret at the Lord Mayor's inability to be present owing to being in London. In expressing thanks for the hospitality, Alderman Kaye said he was pleased to see two of the City's revered citizens, Mr. Potter Kirby and Mr. Bloor. In their day, York had the cheapest gas in the country, but he was sorry he could not say that now. He was pleased that the Manchester District Section had seen fit to visit York. It always gave them pleasure to have visitors who came to see the city's treasures. There was no more beautiful example of Georgian architecture than the Assembly Rooms, and they were proud of the way these rooms had been restored. They also had the famous Shambles which were gradually being renovated; the Minster dominating the city, and the Castle Museum.

A group of members at the York works.

Problem of Extension

The problem of extending the gasworks was surely capable of solution, just as the problems which the ancient city had had to face in the past. He hoped that they would all take away lasting memories of their visit to York.

Mr. A. Henshall, who also responded on behalf of the guests, said that the Manchester Section was the only one left whereby officials from Lancashire and Yorkshire could meet and get together. To split the boundary between the two counties would, in his opinion, be a retrograde step.

Mr. G. E. Currier, O.B.E., President of the Institution of Gas Engineers, welcomed the opportunity to propose the toast of the Manchester and District Section for three reasons. Firstly, he was honoured and privileged to repre-

sent the Institution of Gas Engineers; secondly, he was pleased to be able to support his colleague on the Board, Mr. McDonald, on his day; and thirdly, as a long serving member of the Section, he was happy to join in the visit to a works in the management of which he had an interest.

The Manchester section had counted many distinguished 'foreigners' as well as 'natives' among its members and office bearers. Not the least distinguished among those 'foreigners' was Mr. McDonald, whose name he coupled with the toast. 'Mac' might be a wee quiet man, but no one under-rated the extent of his knowledge, the soundness of his judgment and the strength of his support in the work of the Board, of the Manchester Section, and of the industry as a whole.

Fostering Good Spirit

Such gatherings were valuable in that they fostered that friendly spirit among members which helped to break down barriers of natural reserve which might hinder the free exchange of views and experiences. With the new organisation of the industry, it was more than ever necessary for gas engineers to be given opportunities to speak freely and equally among themselves as professional men, rather than as senior or junior members of Board staffs. The meetings of district sections satisfied that urgent need.

The Manchester Section, drawing its members principally from two neighbouring Boards which had different problems to meet, provided an especially valuable forum for the presentation of technical papers, and that discussion and airing of views, of which they could not have too much.

They were witnessing the gradual development of new techniques in gas-making, but the burden of perfecting those techniyues and devising further improvements must fall on the younger gas engineers. Now was the time to encourage them to come forward with their ideas, for constructive criticism and guidance by the more experienced. Older members should help them by inducing them to become members of the Section, by helping them to take an active part in the work of the Section, and by persuading them to contribute to the discussion and to ventilate their problems at Section meetings.

Oldest English Section

The Manchester Section was the oldest district association in England; the second oldest in Great Britain. It had a sound tradition with a long list of past Presidents who had ultimately become Presidents of the Institution. He was confident that this tradition would be maintained and that members would continue their active support of the Section and their interest in the training of the younger members. Under Mr. McDonald's leadership, there could be no doubt that this aspect of the Section's activities would receive every encouragement, for he had very much at heart the welfare of the rising generation in the industry.

The Chairman, responding, said the toast would at first sight appear to refer to an organisation still in its infancy since the Manchester and District Section had only had three Chairmen. In fact, however, the organisation had long since passed maturity, having been founded as long ago as 1870 and the present title recorded the fact that it had renewed its youth by its closer contact with the Institution. Long might that close contact continue which could only be for the good of the Manchester and District Section in particular and its members in general.

Special interest was taken in these tray purifiers at York gasworks, manufactured and installed by R. and J. Dempster, Ltd.

He was proud of the fact that so many past Presidents had found it possible to support him that day, but he suggested that that was part of their tradition. There were no fewer than 12 past Presidents or past Chairmen present, among whom he mentioned Mr. F. H. Robinson, who was President in 1925, and Mr. C. S. Shapley, who was President in 1926 and 1927, as the past Presidents of longest standing with them. Mr. Currier was present in four different capacities; first as an ordinary member, having been elected in 1926; then as a past President, having succeeded to the Chair in 1946. As Deputy Chairman of the North Eastern Gas Board he occupied an honoured position, but it was as the reigning President of the Institution of Gas Engineers that they especially welcomed him.

It had been almost traditional for members to visit the Chairman's works during his year of office. He had found himself in the position of not having a works of his own. Under the circumstances he thought it appropriate to borrow one of the works which came under his control prior to nationalisation.

The Same Men

The incidence of nationalisation had had little effect on the personnel of the Association so that these same men who regarded the works under their control as their own were still the men who in general were in control today, although in some instances they might have gone to new works. Those officials were still striving to give the best possible service to the public and were justified in feeling somewhat aggrieved when unwarranted criticisms were levelled against them. They were still striving to carry out the same or similar jobs, with the same efficiency as they did in the past.

The members spent the afternoon going round the York gasworks and were later entertained at tea in the Demonstration Hall Showrooms in Davygate.

A vote of thanks was moved by Mr. A. K. Collinge (Preston), Senior Vice-Chairman of the Section, on behalf of the members for the hospitality they had received, and also to Mr. Sturrock, Group General Manager, Mr. Cureton, Production Engineer, and to the members of their staff who had acted as guides during the visit to the works. This was seconded by Mr. H. Johnson (Leeds), Junior Vice-Chairman.

ALKALI REPORT—

(*Concluded from p. 142*)

ages, not the least of which, from the atmospheric pollution point of view, is the uniform rate of foul gas evolution which is more readily dealt with in an efficient manner.

In his report from Scotland Mr. Birse says concentration of gasworks liquor was carried out on the same limited scale as in previous years. It nearly all goes into the manufacture of sulphate of ammonia. One firm has put in hand experimental work on using concentrated by-product ammonia for other purposes; although results to date are inconclusive no major difficulty appears to have arisen and the experiments continue. If the work comes to a successful conclusion it could have an important bearing on reducing the problem of riven pollution by gas liquor and at the same time would indirectly ease the demand for sulphur for sulphuric acid manufacture.

Production of sulphate of ammonia (tons) at registered works in Scotland was as follows:

Liquor	1951	1950
Gas works ...	6,900	7,900
Coke ovens ...	12,400	12,400
Shale works	16,300	17,600

The report is published by H.M. Stationery Office, price 2s.

Design in Copper Tubing

By H. T. WRIGHT, Assoc.M.Inst.Gas E.,
Northern Division, North Thames Gas Board

From a paper to the London and Southern Junior Gas Association

IN introducing copper tubing and fittings for gas installation work, three outstanding points suggest themselves: (1) Copper pipe sizings bear little resemblance to those of corresponding steel; (2) a precision joint is used; and (3) a formidable array of special and comparatively expensive fittings is available, although most are not essential. Throughout this paper, the term 'iron' is used in a colloquial sense and refers to both wrought iron and mild steel tubing and fittings.

It is questionable whether iron or steel tubing and fittings must remain indefinitely for gas installation pipes. Long conscious of the comparatively massive tools and equipment required in its manipulation, and the overweighty appearance of the finished job—both inevitable but depressing features for generations—efforts have for many years been directed towards finding a substitute material. Synthetic resins, or new metal alloys, seem always to be just round the corner, but it is not easy to fulfil requirements when the complications of workability, reliability, durability, and the effects of gas quality are fully considered.

Used by the Egyptians for plumbing nearly 5,000 years ago, copper has always merited confidence as a reliable material that is easily worked and markedly resistant to corrosion. With the modern attractions of being lighter, cleaner to work, and unquestionably of neater appearance, it is superior to iron and from the fitting point of view offers a decided appeal to the craftsman's instinct. The effect on the consumer is also very favourable—a neater job, an impression that the new fixing is related in some way to the finished appearance of the new appliance, the whole job carried out on the premises, and a harmonising finish that may readily be secured.

At comparable cost, therefore, there seems no reason why copper should not be used in preference to iron. Superficially, the objections are that it is of different size, requires a new type of joint, and that too wide a range and complexity of relatively expensive-fittings is required.

Technical Aspects

Differences in the installations of copper are apparent at the beginning. First, pipe diameters seem unrelated to those of iron, a new type of joint is required, and finally there are 15 adapter couplings suitable for the point of connection and eight more for use en route. It is essential to secure a proper understanding of these before installation can be effectively undertaken.

TABLE 1

TABLE OF DISCHARGE—INSTALLATION PIPES

The following table showing discharge in cu. ft. per hour is based similar to the Code of Practice upon a pressure drop of 3/10 in. w.g. and Sp.Gr. 0.4-0.5.

Nominal pipe size	Relative carrying capacity	Length of Pipe—ft.								
		10	20	30	40	50	60	70	80	90
¼ in. Iron	1	4½								
¼ in. Copper	3	15								
⅜ in. Iron	8	36	25							
⅜ in. Copper	10	45	32							
½ in. Iron	16	72	51	41						
½ in. Copper	18	80	55	46						
¾ in. Iron	29	131	92	75						
¾ in. Copper	49	220	160	130						
1 in. Iron	61	273	193	157	136	122	111			
1 in. Copper	120	540	380	310	270	240	220	200	190	180
1 in. Iron	123	546	387	315	273	245	223	207	193	182

The Relative Carrying Capacity indicates the number of branch pipes that may be taken off. Divide by R.C.C. number concerned. For example, the number of ¼ in. copper branches that may be teed from a ¾ in. iron supply = $\frac{61}{18}$ = 3 (to nearest whole number).

From a practical point of view it is well known that the most important factor governing the passage of gas through a given length of pipe with minimum pressure loss is its effective or internal diameter.

TABLE 2

COPPER SUPPLIES TO REFRIGERATORS AND BACKGROUND HEATERS

Appliance and max. gas rate cu. ft. per hour		Ft. run—allowing pressure drop of 5/10 in. w.g. Size of Pipe	
		3/16 in.	¼ in.
Refrigerator	1½	38	77
,,	2	25	50
,,	3	16	32
Refrig. Bkd. Htr.	4	13	27
Background Htr.	6	9	18
,,	8	6	13

Size for size, copper is smaller than iron; taking the next size above in the case of copper, however, shows a balance in its favour and since in doing this the outside diameter is broadly preserved (¼ in. copper is no larger than ⅜ in. iron, and so on) it follows that in copper the next size above will do better than iron. The exception is 1 in. copper which is seen to be effective both for ¾ in. and 1 in. iron.

Installation

In arranging the supply of gas to one or more appliances, the first consideration is that of sizing the pipe according to volume of gas and the length, and the first rule derived from consideration of Table 1 is: In sizing the pipe according to volume and length, generally in extending a copper supply use one size larger than that required for iron, except for 1 in. In no case should an existing iron supply be less than one size below that selected for copper.

It is not always appreciated that in the making of a capillary joint, no turning of the pipe or fitting is required; hence a length of tubing comprising one or more bends or setts can usually be sprung into position on the joint without further manipulation as in iron. Following experience with the conventional pipe bending machine, it has been found practicable to use a bending spring, with marked economy in weight and time, up to ¾ in. size. Its diameter appears critical and it must be well-greased in use.

In negotiating joists, penetrating along floor boards, and traversing projecting facework, the bending radius cannot always be accommodated conveniently or neatly and an elbow is necessary. In our experience, three elbows are required on an average for every five small jobs.

While appliance connections are threaded B.S.P. sized historically to cover most requirements in fitting with iron tubing. in any copper pipe run of some length the major part must obviously be over-sized in the interests of reduced pressure loss. When, therefore, union connections are inserted at the maintenance of control cock in the vicinity of the appliance, a convenient opportunity is offered to reduce the pipe size to that normally used. If necessary, adapt point and pipe to required size before commencing and finishing respectively in copper. In practice, this results in a smaller and neater installation in the vicinity of the appliance, which emphasises the inherent neatness of copper in a very striking manner, but the neat appearance can be ruined by use of adapters screwed into the linings.

The handicap to the wide-scale adoption of copper is that its price has risen enormously over the last decade. Nevertheless,

a high material first cost should be offset by an accompanying reduction in the labour costs for installation. The question can only be resolved by experience. Until actual experience with its installation, even in 'pilot' form, has been gained, there can be no fair assessment of the factors involved; for this reason no set figure would be compatible with all circumstances everywhere but the following review may be of interest, provided it is appreciated that the data are derived as a result of more than 10,000 installations and with the considerable advantage of bulk forward buying.

At prices to consumer obtaining in 1950, it can be shown that not only is copper pipe nearly twice as expensive as iron, but the fittings average nearly 4½ times as much as plain iron or 3½ times as much as galvanised iron.

This expense of fittings is largely offset by fewer being required with an accompanying advantage of less likelihood of leakages. Table 3 shows the numbers of fittings required for fixing water heaters to available gas and water points, for example:—

TABLE 3

Appliance	Number of tube fittings		Extra cost of copper compared with:—	
	Iron	Copper	Iron fittings	Whole installation
Multi-point	23	8-12 av. 10	55%	7%
Single point	10	6- 9 av. 7	79%	6%
Sink storage	10	6- 8 av. 7	15%	2%
Sink instantaneous ..	12	3- 5 av. 4	58%	10%

The last column shows that the difference in cost of copper fittings is not so marked when the overall figure, including control cocks, flue pipe, surveyor's fees, etc., is taken into account.

In extending pipe runs, this infrequency of copper fittings is again appreciably reflected in diminishing cost. From costing more than the pipe itself on short runs, it decreases to about half the cost of the pipe on extended runs. For the most popular size, ¾ in., the total cost of material alone, comprising both pipe and fittings, emerges at an average 230% that of iron.

It is apparent that the superficially high first cost of copper pipe and fittings is not reflected to a commensurate extent in the overall costs of installation, and Table 4 summarises the competitive position, allowing for the reduction in labour cost which should be achieved.

TABLE 4

Comparison		% Increase in costs	
Copper	Iron	Material only (including fittings)	Overall (including labour)
in.	in.		
½	¼	238	35
¾	½	130	15
1	¾	237	75
1	1	127	50

For the present it might be stated that copper justifies itself only as an alternative to steel except that in all conditions it is vastly superior in appearance, but clearly any recession in its price will be welcomed and lead ultimately, it is hoped, to a strongly competitive position.

Rationalisation

Apart from the inherent advantages of copper in being lighter, cleaner, easier-working, and of neater appearance, at the present time it is an alternative material during the shortage of steel. The introduction of another pipe requiring a new approach for its proper installation, however, requires some care if it is to succeed. The all-important question of cost, for example, cannot be investigated without practical experience, and how is this best secured if copper has never been attempted before? What are the snags in inculcating the necessary 'copper-mindedness' in those most closely concerned with it?

These matters are considered from experience with the object of ensuring the least disturbance in the daily continuity and a flexibility in application leading to a maximum. Administratively, the extra tools and materials are few. Apart from a hacksaw (32 T.P.I.), mouth blow lamp or roarer, grade A solder, bastard file (22 cuts per in.) and flux, all of which are in normal use, there are required steel wool, tube rounder and mandrel for each size, and copper pipe bender and springs.

The potential range of fittings number 110, but it is found that 19 in frequent and eight in occasional use suffice for all purposes, with the added attraction that the usual ancillary fittings to an installation—gas and water stop cocks, governors, cut-off valves, etc.—may still be retained for the more common iron supplies. In this connection, while special copper fittings such as double union stop cocks are attractive, they are expensive unless offset either by quantity or some unique labour-saving feature seldom achieved in practice.

In regard to wide-scale application, there is much to commend selective trials in the first instance, with adequate briefing and training of those concerned. Subsequently the scope may be widened once the technique is acquired and disseminated.

When the fitter has completed his training, the need for greater care is soon impressed with the following points: (a) Cleanliness in making the joint. Any slackness here is reflected by leakages, but, on the other hand, since this need is instilled he has every confidence in the soundness of the finished job. (b) Joint-making *in situ* is more difficult in requiring greater accessibility than iron. This tends to slow up work under floorboards. (c) Bending is more freely utilised. (d) Greater precision in cutting the pipe. (e) The fittings must be the correct size and type, with little or no opportunity for extemporising; here the responsibility of the representative, who on the North Thames Board orders the material for the job, is most marked.

Our experience is that, while there are no difficulties in sizing copper pipe according to rule, and providing the right fittings to most appliances, water heaters and their variety of connections are a constant source of perplexity. It has been found quite practicable to issue these items individually assembled for each type of water heater, and identified by a simple code number ultimately interpreted at the stores. Each specification provides for main or tank cold feed in any one of four fixing methods—two to lead pipe, one to iron, or an entirely new supply from tank. In practice, the representative merely specifies the length and size of extra pipe that may be required, together with the necessary coupling to the existing gas point and the code number of the appliance concerned. This greatly simplifies his work, the clerical routine, and entirely avoids the fitter getting unsuitable material while ensuring uniformly neat installations throughout the area.

WEST MIDLANDS COAL OUTPUT

COAL output in the West Midlands division of the National Coal Board in the first 26 weeks of 1952, at 9,238,561 tons, was 29,557 tons more than in the corresponding period of last year, stated Mr. I. W. Cumberbatch, the Divisional Chairman, in his monthly review of output. Thus the division has maintained the first half-year improvement over the preceding year which was shown last year over 1950.

Due to the difference in the fall of the Whitsun holiday last year and this, a true comparison between the output this year and last is not possible for the five-week June period. The output in June, 1952, was 1,653,857 tons. Comparison of Saturday output is also impossible because of the difference in arrangements covering the voluntary shift last year and this. Whereas in June, 1951, the voluntary shift was worked on only one Saturday, it continued to be worked at most pits this year on much the same lines as in the winter. This has benefited the total output for the first half of 1952.

Manpower in the division continues to show a satisfactory increase. On June 28 the number of men on colliery books totalled 58,069, of whom 20,704 were employed at the face. These figures show an improvement since the beginning of the year of 2,816 for all employed, and of 1,191 in the labour force at the face.

BULK SUPPLY FROM PERTH

By R. H. FOSTON,
Deputy Engineer and Manager, Perth

From a paper to the Scottish Junior Gas Association (Eastern Division)

AN interesting problem occurred in the Perth district at the time of nationalisation. The gas undertaking of Coupar Angus, some 13 miles from Perth, was in a very bad state. The carbonising plant was worn out and everything except the holder, which was comparatively new, was in a deplorable condition. One of the Perth trunk mains, partly 12 in. dia., partly 10 in dia., terminated at Scone, approximately 11 miles from Coupar Angus works. At the same time the neighbouring gasworks of Blairgowrie, approximately 4½ miles beyond Coupar Angus, had reached the limit of its manufacturing capacity and considerable capital expenditure would have been necessary to provide for an expanding output. The question of a bulk supply was investigated. The information available at the time was as follows:—

No. of consumers	... Coupar Angus	...	700
No. of consumers	... Blairgowrie ...	...	1,600
Maximum daily output—Coupar Angus—approx.			35,000 cu.ft.
Maximum daily output—Blairgowrie—approx.			190,000 cu.ft.
Storage capacity—Coupar Angus (one holder)			35,000 cu.ft.
Storage capacity—Blairgowrie (three holders)			130,000 cu.ft.

On the basis of a total initial demand of 295,000 therms per annum, including 20,000 therms for the various villages and scattered dwellings that might be connected en route, it was estimated that a bulk supply from Perth could be provided for a transmission cost of 5d. per therm inclusive of interest and depreciation charges. Allowing for the higher efficiency of gas manufacture at Perth owing to the larger manufacturing unit, it was shown that the ultimate cost of gas sold at Coupar Angus and Blairgowrie would be cheaper with a bulk supply from Perth than if the local manufacturing units were kept working and reconstructed to deal with increased outputs. One important point in favour of bulk supply mains to smaller undertakings is the very long life of cast iron mains as compared with manufacturing plant and machinery. The recognised depreciation period for spun iron main is 45 years, although they can be expected to last considerably longer than that.

200 Yards a Day

The scheme ultimately approved was for a 10 in. dia. spun iron main from Scone to Coupar Angus and an 8 in. dia. main from Coupar Angus to Blairgowrie. We were fortunate in obtaining delivery of most of the pipes promptly, and as the greater part of the route lay through grass verge the contractor was able to use mechanical excavating equipment to the best advantage, making it possible for each squad to lay anything up to 200 yards of pipe per day. Spun iron pipes with screwed gland flexible joints were used throughout except for a bridge crossing, where it was necessary to use steel. All jointing was done by Gas Board employees and work was tested at 30 lb. per sq. in. air pressure. The existing trunk main terminating at Scone was converted into a medium pressure feeder main by installing district governors on all branch mains and service governors on all services supplied from the main.

The scheme was set working at the earliest possible date in order to relieve the position at Coupar Angus. As an interim measure the bulk supply is direct on to the district at Coupar Angus, and at Blairgowrie there is a continuous flow into the holders, manually controlled. When completed, however, the scheme will be remote controlled from Perth, using equipment supplied by the Bryan Donkin Co., Ltd., and the Automatic Telephone and Electric Co., Ltd. The scheme will operate in a similar manner to the very successful scheme already in operation at Liverpool, as fully described by Mr. F. Bell. The flow of gas through volumetric governors at each station will be adjusted as necessary, and gasholder valves opened or closed, all by means of push buttons at Perth, and information as to the stock of gas in each holder, the flow of gas into the holder, and pressures will be automatically transmitted back to Perth. The system operates by a series of electrical impulses transmitted through a pair of telephone wires rented from the G.P.O. Normally one pair of wires is required between each remote site and the master station, but in this case it was found that Blairgowrie was on the fringe of the effective distance for successful signalling by the normal direct current method, and it was decided, therefore, to adopt voice frequency signalling. By this system it is possible to control both remote sites through one pair of wires which pass from Perth via Coupar Angus to Blairgowrie. The cost of renting a pair of telephone wires is in the region of £10 per mile per annum, so the saving effected by the use of one pair of wires is substantial.

The bulk supply scheme was designed with plenty of reserve to allow for expansion of existing loads (annual consumption per consumer at Blairgowrie and Coupar Angus is still very much below the Perth average) and to enable additional loads to be taken over in the future. Approval has already been given for the extension of the scheme to Alyth, nearly six miles beyond Blairgowrie, as soon as pipes are available. The initial pressure at Perth is at present 20 in. W.G.

Mainlaying Costs

It is most difficult in these days to give any reliable guidance in regard to costs, as by the time that a main has been completed and costed the costs are out of date. Allowance must be made for the nature of the ground and of the road surface, the distance which the labour force has to travel, and the speed at which a job has been carried out. The average mainlaying costs for the bulk supply scheme to Coupar Angus and Blairgowrie were as follows:—

10 in. dia. spun iron main from Scone to Coupar Angus. 1949-50.

	Per Yard.
Cost of pipes, flexible joints, and specials ...	28s.
Other costs, including contractor's charges for excavation and reinstatement work	17s.
	45s.

(Approx. 50% of length in grass verge and 50% in waterbound path.)

8 in. dia. spun iron main, Coupar Angus to Blairgowrie. 1949-50.

	Per Yard.
Cost of pipes, flexible joints, and specials ...	21s.
Other costs, including contractor's charges for excavation and reinstatement work	18s.
	39s.

(Approx. 50% of length in tarmac carriageway and 50% in waterbound path.)

The Ministry of Materials has announced that from July 5 the price of electrolytic copper is increased from £281 to £287 a ton, delivered consumers' works. Discounts and premiums remain unchanged. The Ministry of Supply will make corresponding adjustments in the controlled prices of scrap and secondary metal. The price increase follows the conclusion of a further round of negotiations between the Ministry of Materials and the Commowealth suppliers.

A Site of 36 Acres at Brinsworth, near Rotherham, has been acquired by the British Oxygen Co., Ltd., for a new oxygen producing plant. It is hoped to start building this year. When the plant is completed the company's output of oxygen in Sheffield and Rotherham will be about doubled. The cost of the building will probably exceed £250,000, apart from the cost of piping supplies direct to Sheffield and Rotherham steelworks, which may be carried out in the future.

POST WAR DEVELOPMENTS AT SOUTHALL

By D. C. BERTRAM, G.M., B.Sc., M.Inst.Gas E., M.Inst.F.

Station Engineer, Southall Works, North Thames Gas Board

From a paper to the London and Southern Section of the Institution of Gas Engineers

SOUTHALL works, whose nominal capacity is 20 mill. cu.ft. per day, is the largest gas-making station in the western part of the North Thames Gas Board's area of supply. It is situated at the western end of the trunk main which emanates from Beckton, and in addition to its own output receives considerable quantities of gas daily from other works of the Board. The gas is re-pumped at Southall to Harrow and Pinner and westwards to the Staines and Chertsey districts in quantities necessary to meet the required consumption. Gas can also be delivered to Slough and Uxbridge by a 12-in. main, which was installed in 1943 as a war emergency link in case of bomb damage to Slough works.

Southall was considered to be a suitable place to site new plant for the production of carburetted water gas because of its position near to the periphery of the Board's district, and a 12 mill. cu.ft. per day plant is now being installed. Southall was also considered to be a suitable site for the same reasons for peak load oil gas production, and a plant of 3 mill. cu.ft. per day capacity was completed last year.

Before these and other new plants could be brought into operation, it was necessary to assess the adequacy of the existing works supply and power services, and also to make up the arrears of maintenance and replacement of plant, which as at most works had to be deferred till after the war.

Steam and Power Supply

At the end of the war it was realised that the existing steam raising plant would be inadequate to meet the demands of increasing gas outputs, heavier boosting loads, and the steam and power requirements of additional gas-making and ancillary plant.

In 1940 the Sulzer plant attached to the intermittent vertical chamber retort house was shut down for reasons of blackout security and the difficulty of obtaining personnel to carry out the maintenance of the hot coke containers. This created a loss of approximately 14,500 lb. of steam per hour, and reduced the capacity of the steam raising plant to such an extent that at times of maximum demand it was necessary to shut down ancillary plant for short periods in order to balance the load while still endeavouring to maintain full gas output. It is now proposed to bring this plant into operation again after extensive modifications, which will eliminate many of the original defects.

To compensate for this loss, three 30 ft. by 8 ft. Lancashire boilers were converted in 1943 to oil gas tar firing by bricking-up the fronts of the furnace tubes and by using a very simple burner to which the tar was fed by gravity from two overhead tanks and injected by steam at 115 lbs. per sq. in. pressure. This modification increased the capacity of each boiler by at least 70% and worked satisfactorily, although difficulty was experienced from time to time in maintaining a smoke-free stack due to the limitations of the fuel burner.

After the war it was necessary to bring into full operation the carburetted water gas plant, which had been little used for some years prior to the war and during the years 1938-45 had been extensively used for making producer gas, with periods on water gas production. In 1946, therefore, it was necessary to augment still further the steam supply, and three Cochrane boilers were installed complete with foundations, housing, and connections, together with the necessary equipment for burning oil gas tar. The nominal capacity for each boiler was 3,250 lbs. per hour, and the output of this range of boilers was fed into the main works supply main at a point furthest from the retort house waste heat boilers. Fig. 1 illustrates the Cochrane boiler house.

As the demand for steam was still increasing, two small 24 ft. by 7 ft. Lancashire boilers in the main boiler house, used exclusively to supply steam to the carburetted water gas plant, were also converted in 1947 to tar firing. The chimney stack, however, which also dealt with the flue gases from three other Lancashire boilers was of insufficient cross-sectional area to give the required pull. As a temporary expedient a length of brick flue was quickly built for these two boilers, and a separate steel shaft 70 ft. high, fabricated from war emergency gas mains, was erected beside the main boiler house stack and braced to it for support. This improvisation was entirely satisfactory.

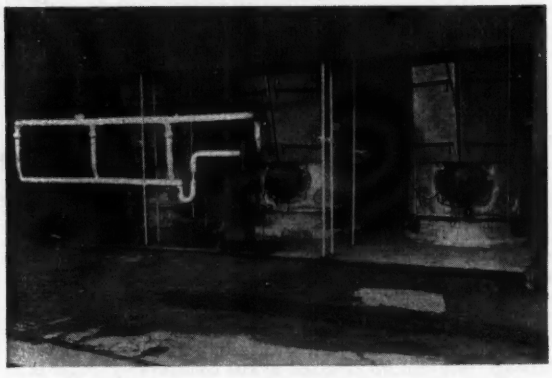

Fig. 1.—Cochrane Boiler House.

During 1949 and 1950, to assist in the balance of output of pitch and creosote, 1.6 mill. gal. of pitch-creosote mixture was burned under the Lancashire boilers, using modified burner equipment designed and made on the works. The pitch-creosote mixture was delivered to the works from Beckton or Southall tar works by road tanker at a temperature of about 160°F. and it was then pumped into two overhead well-lagged steel tanks of 16,000 gal. total capacity which had been fitted with steam heating coils on the tank bottoms. The fuel was fed by gravity to the boilers through a steam heated tubular heater which maintained the temperature of the mixture at 190°F. by thermostatic control. To ensure reliability in operation, each burner was fitted with a dual supply of oil gas tar or pitch-creosote, but it was seldom necessary to change over fuels. To draw the boilerman's attention to the need for adjustment of tar or steam supply to the boilers, a simple invisible ray apparatus was installed to operate across the chimney base which electrically operated a warning bell to indicate smoke emission in excess of normal conditions.

It is appreciated that the cost of liquid fuel is greater than the cost of breeze per unit of steam produced, but in this case the quantity of steam required was the deciding factor, and this could not have been produced in sufficient quantity by burning solid fuel. The reduction in labour costs (*i.e.*, number of boilermen required) when burning liquid fuel offsets to some extent the higher cost of the fuel.

A certain amount of improvisation has been necessary to maintain an adequate supply of steam for works use during

(*Continued on p. 153*)

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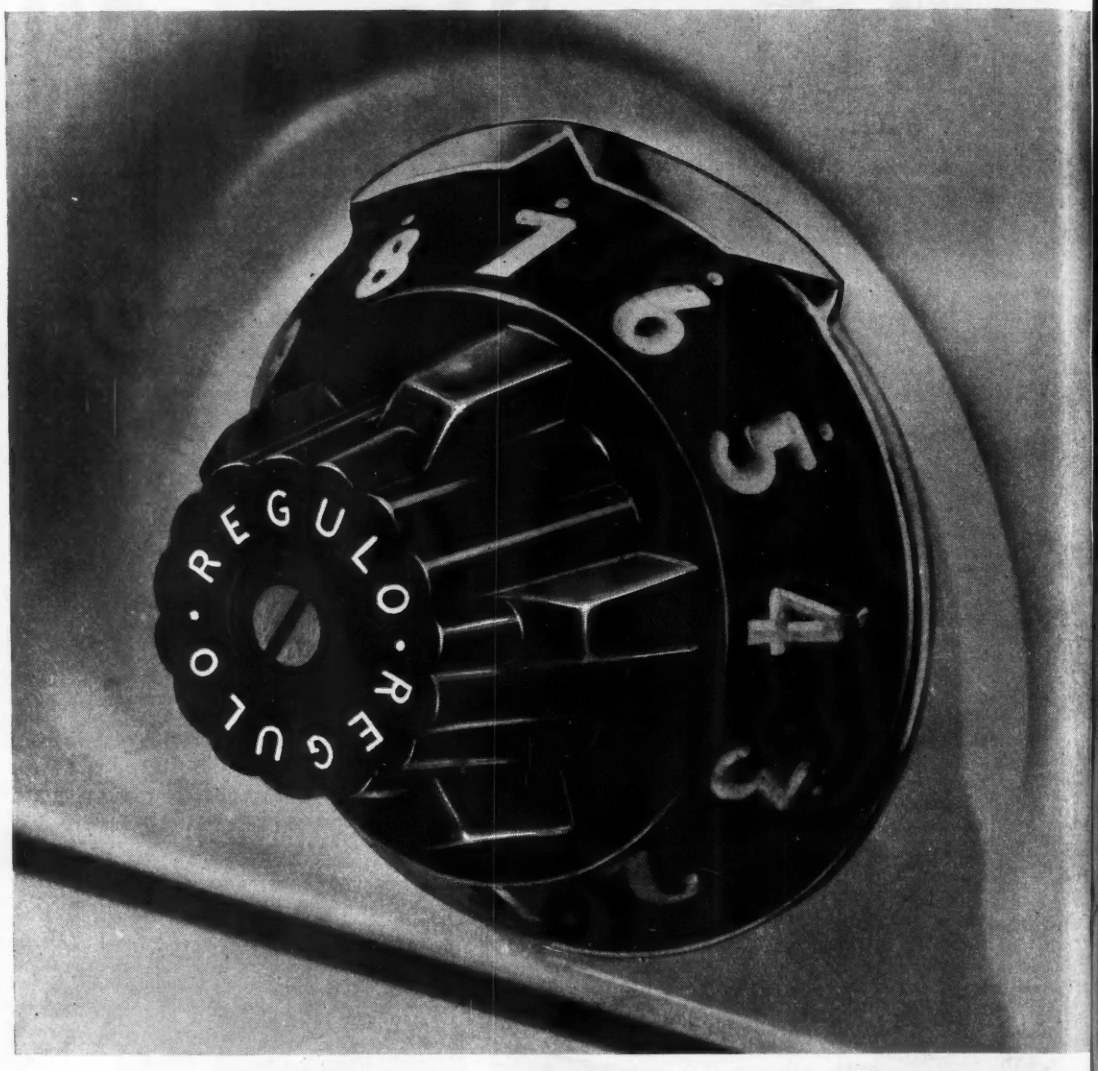

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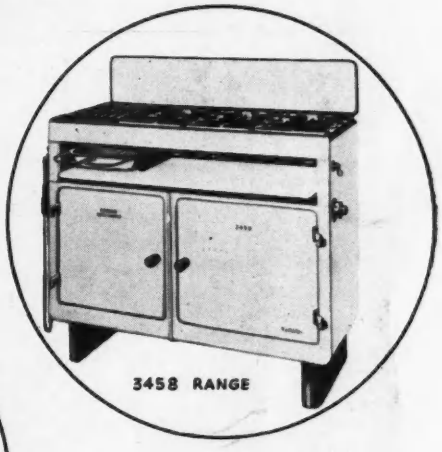
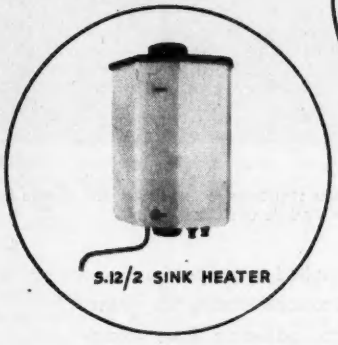
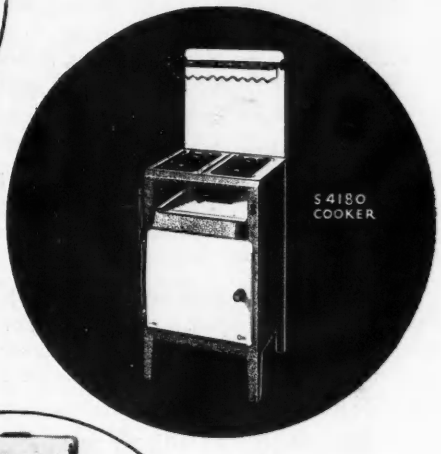
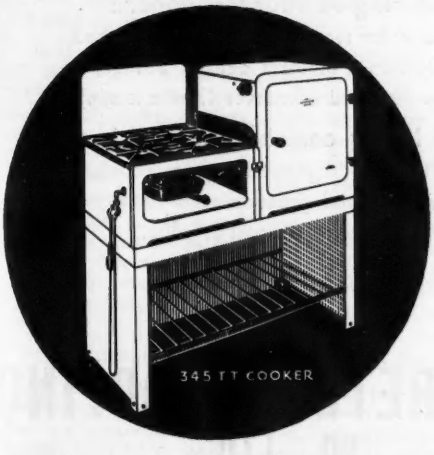




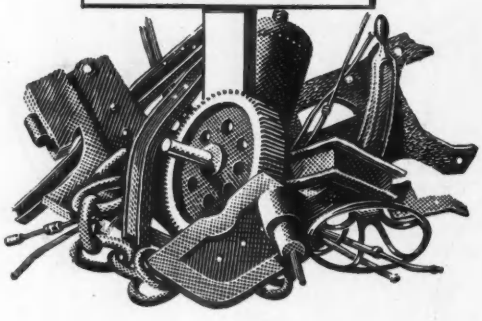




NEW WORLD NEW WORLD NEW WORLD

WHAT EVERY MANAGEMENT SHOULD KNOW ABOUT

scrap



What is scrap?
Obsolete plant and machines, old spares, redundant buildings—anything made from iron and steel for which you have no foreseeable use.

What good is it to me?
No good at all in its present state. But send it back to the steelworks and it can go to make the new steel that you and all steel-users need. Remember—a ton of scrap may make a ton of new steel.

Can't they make steel without scrap?
Yes—but not enough steel. Last year, 58% of our steel was made from scrap. The more scrap we use the more coal, coke and iron ore we save for other important purposes.

What should I do with my scrap?
See your local scrap merchant. He will be glad to help with dismantling and collection. If you have any trouble disposing of iron and steel scrap, write to the British Iron & Steel Federation for the address of your Joint District Scrap Committee.

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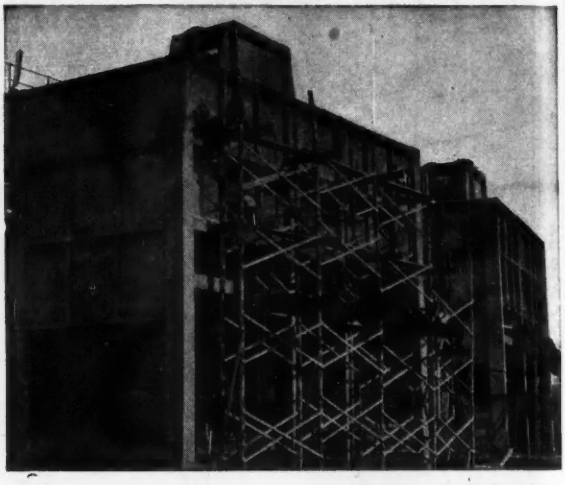

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the past few years. To reduce the cost of steam raising, and also to replace some of the older Lancashire boilers (two are over 50 years old) and to dispense with the use of the three Cochrane boilers, it was decided to install a new boiler house on a central site opposite the present main range boiler house. This plant was completed in February, 1951, and has worked successfully since that time.

Breeze Fired Water Tube Boiler

The boiler house consists of a steel-framed building 99 ft. by 53 ft. by 69 ft. high on piled foundations with panelling of 4½ in. sand-faced rustic Fletton bricks. The design is essentially practical in conception and of very pleasing appearance as an industrial building.

There are two water tube boilers (Babcock and Wilcox) at present installed, but the building is designed to accommodate an extension of two additional boilers. Each boiler has a heating surface of 5,012 sq. ft. and a nominal evaporative capacity of 15,000 lb. of steam per hour, on which an overload steaming rate of some 18,000 lb. per hour is possible, and is equipped with a mechanical chain-grate stoker for burning coke breeze. The furnaces are refractory lined and provision is made for recirculating hot furnace gases through the incoming fuel bed to promote rapid ignition of the low volatile content breeze. The boilers are designed to raise steam at 160 lb. per sq. in., superheated to 500°F., and the auxiliary equipment includes motor driven forced and induced draught fans, recirculating fans, soot blowers, economisers, steam driven turbo and reciprocating feed water pumps, etc.

Breeze is conveyed to the plant by tipping lorry discharging into an underground hopper which feeds, through a Simplex loader, a fully automatic skip hoist having a capacity of 20 tons of fuel per hour. The final arrangement will be two hoists for the four boilers, each hoist constructed on the centre line of one pair of boilers. At the top of the hoist there is a clear discharge of the skip to the overhead bunkers without chutes, the fuel spilling into the two bunkers equally. This method eliminates the need of belt conveyors and makes a very much simpler arrangement of fuel handling plant in addition to reducing the size of the boiler house building. The bunkers hold sufficient fuel for the boilers steaming 48 hours on full load.

In the basement of the building, at ground level, there are installed the forced draught and recirculating fans, paddle ash extraction gear, clinker, riddlings, and dust hoppers for the mechanical stokers, and soot blowers; grit hopper for the grit arresters, and the lift pumps for raising softened water to the feed water storage tank. A lobby is also provided for the use of plant personnel, with lockers for clean and dirty clothes, and full washing facilities.

On the firing floor there are two instrument panels, one set for each boiler, which accommodate all the instruments for the guidance of the boilerman in maintaining efficient operation of the boilers and controlling the output. These instruments indicate or record the working conditions of the plant, thereby providing useful data for checking the performance periodically. These include draught gauges, and recorders for steam pressure and temperatures, indicating pyrometers, feed water meters arranged to indicate and record the rate of feed water flow, and steam flow meters which indicate and record the steam flow from each boiler, together with the equivalent air flow necessary for efficient combustion, and the temperature of the exit flue gases. A CO_2 flue gas indicator is also included.

Fig. 2 illustrates the firing floor of the boiler house.

The fan floor, above the boilers, is approximately 54 ft. above basement level, and the motor-driven induced draught fans are installed here, each with their discharge flues leading to the brick-lined steel chimneys, 55 ft. high, which pass through the flat reinforced concrete bitumen covered roof and discharge the waste gases to atmosphere at a height of 109 ft. above ground level. Four 8 ft. by 10 ft. roof lights in the concrete of the boiler house roof give excellent illumination on

Fig. 2.—Firing Floor of New Boiler House.

the fan floor, which is constructed of egg-crate type steel flooring, which promotes ventilation of the building and dissipates the heat radiated from the boilers below.

The economisers are of the Senior H type with horizontal finned tubes, complete with soot blowing equipment, and are situated at the back of each boiler approximately 12 ft. above the firing floor. This is a neat and compact arrangement, and with the platforms as arranged, easy access is provided for maintenance, etc.

The grit arresting plant consists of a Sirrocco separator installed at the inlet to each induced draught fan. Grit is withdrawn from the separator through a cyclone and discharged into the collecting hopper situated at ground floor level. The induced draught fans discharge into the chimney at approximately 10 ft. above the chimney base, and any grit deposited in the chimney base is conveyed by means of a 4-in. tube to the collecting hopper at ground floor. The system operates most satisfactorily, as there is little evidence of grit deposited on the boiler house roof.

Boiler feed water is taken from the Grand Union Canal and is softened by the lime-soda process to approximately 2 grains per gal. It is delivered to the basement of the boiler house where it is pumped by electrically driven float-controlled centrifugal pumps to a 30,000 gal. capacity welded steel storage tank 39 ft. above ground level. The feed water then passes through a Lea recorder to the hot well, which receives the condensate from the turbo-generators of the works power house and also the condensate from the turbo-boosters of the gas pumping house. The hardness of the feed water is thus reduced to 1.2 grains per gal. In addition, the hot well receives the exhaust steam from the turbo boiler feed pump, which passes through a Highfield heater, also the steam flashed off the boiler blow-down water entering the flash tank. The discharge from steam traps is also delivered into the hot well. Sensible heat is also transmitted to the feed water from the blow-down water and from the exhaust steam from the reciprocating boiler feed pump by means of separate coils installed in the hot well.

A bright attractive colour scheme has been adopted throughout the plant and building, and all mains and services have been painted the distinguishing colours based mainly upon the British Standard Colour Code.

The labour requirements for the plant are one boilerman and one assistant boilerman per shift and one skip hoist attendant on day work to supervise the fuelling of the plant.

Table 1 gives a summary of results for the half year ended December 1, 1951:

TABLE 1

Fuel used					Coke breeze
Moisture					14.7%
Ash					15.9%
Calculated C.V.					10,000 B.Th.U. per lb.

	Over ⅝	⅝-½	½-¼	Under ¼
Grading Test	3%	36%	34%	27%

Fuel used	8,363 tons
Steam generated	11,264 units (actual)
Lb. of steam generated per lb. of fuel	6.01 (actual) 6.97 F. & A.
Av. steam pressure	145 lb./sq. in.
Av. steam temperature	510° F.
Feed water av. temp. inlet economiser	130° F.
outlet economiser	180° F.

Air-Oil Burning Equipment

Until such time as the Sulzer plant is recommissioned, the base load steam raising plant will comprise the two 15,000 lb. per hour breeze-fired chain grate boilers in the new boiler house and the waste heat boilers of the inclined vertical chamber retort house. As the full capacity of the new carburetted water gas plant (12.0 mill. cu.ft. per day) will not be available till the autumn of 1953 when it will partly replace the existing carburetted water gas plant and be practically self-supporting as regards steam requirements, it will be necessary to keep in service a number of Lancashire boilers to balance the works steam requirements, especially at peak-load periods, and also to provide a standby for a chain-grate or waste heat boiler in the event of one of these units being out of commission.

It was therefore decided to equip six Lancashire boilers with low pressure air-oil burning equipment in place of the improvised burners which utilised steam for injecting the oil fuel.

This installation, which is low in capital cost, provides a very flexible and satisfactory method of balancing the varying steam loads, both seasonable and otherwise, and the boilers can be operated at varying loads without smoke emission from the chimney in a much more satisfactory manner than with the original burner equipment. Moreover, the low labour requirements, compared with solid fuel firing on Lancashire boilers, is a very important and desirable factor on a works where it is extremely difficult at times to maintain the full establishment of plant operators. Fig. 3 illustrates the air-oil burning equipment installed on six Lancashire boilers.

Sulzer Dry Coke Cooling Plant

During the three years this plant operated before the war, it produced steam at a lower cost than any of the direct fired boiler units. The defects in the plant design and layout were due mainly to the position of the 10 cooling units, which were mounted on an elevated platform at one end of the intermittent vertical chamber retort house. This required the use of hoists to elevate the container of hot coke to the boiler floor and independent transfer carriages to convey the containers to positions adjacent to the particular cooling unit. The containers of cooled coke had to be transferred and then hoisted and tipped automatically to discharge the cooled coke at a height of approximately 80 ft. for transfer by belt conveyor to the grading plant.

The long handling time cycle occupied nearly all the time available between the discharging of consecutive chambers, and if there were any delays or breakdowns it was not possible to recover lost time and gas production was affected. In addition, the whole of this operation occupied a considerable time during which the containers became overheated and distorted, and this led to unduly heavy maintenance costs.

Consideration of the economics involved in re-designing certain features of the plant and bringing it into operation again showed substantial overall savings in the cost of steam production when compared with direct fired boilers using breeze as fuel. As waste heat steam is produced only in the intermittent chamber retort house, there is obviously a case for Sulzer produced steam as a base load addition to the new boiler house. This additional quantity of steam to be produced will enable more Lancashire boilers to be shut down and consequently reduce the cost of raising steam.

A scheme has therefore been prepared which will eliminate the defects mentioned above, and also provide for a simplified

(*Continued on p. 159*)

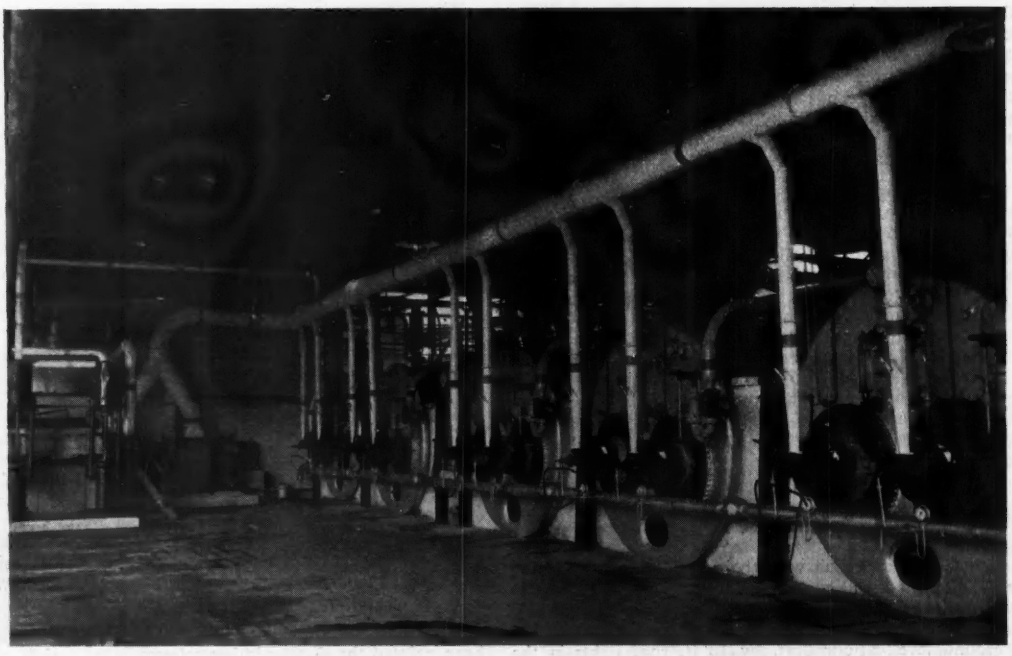
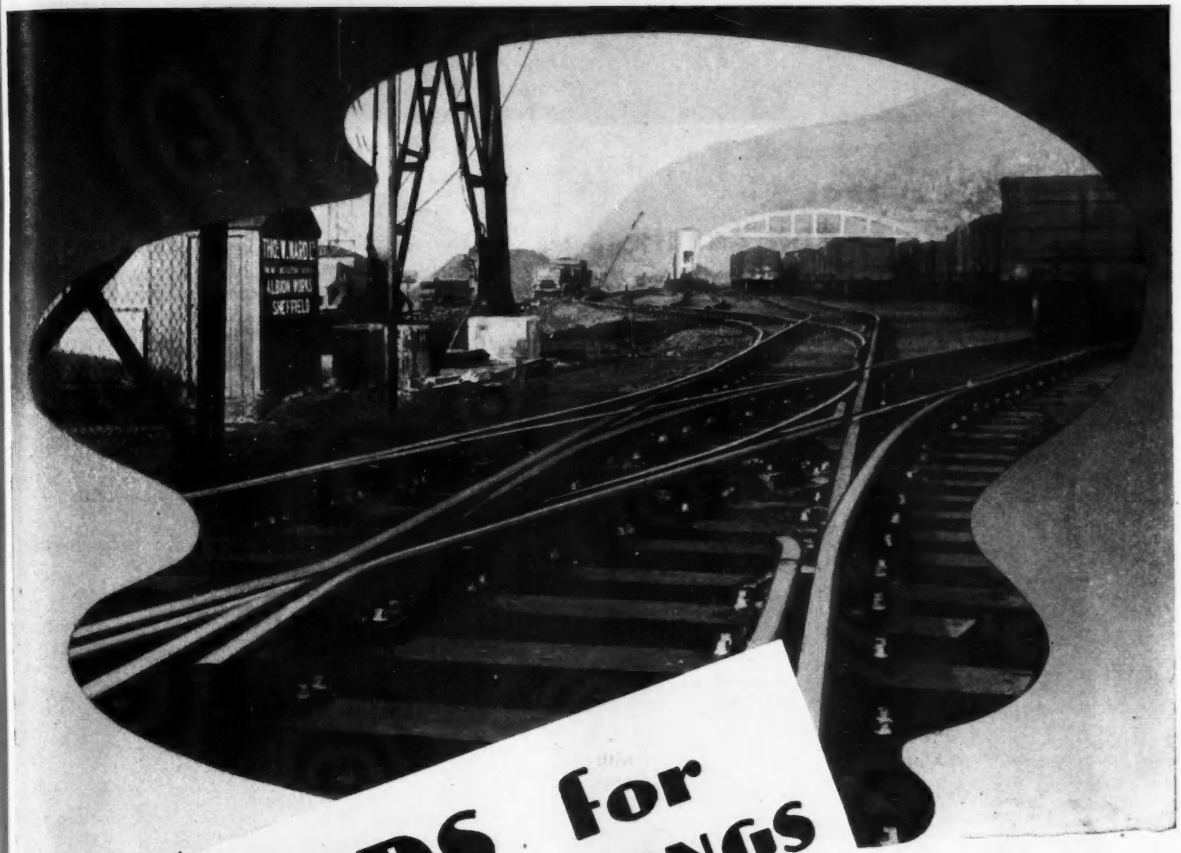


Fig. 3.—Air-Oil Burning Equipment installed on six Lancashire boilers.



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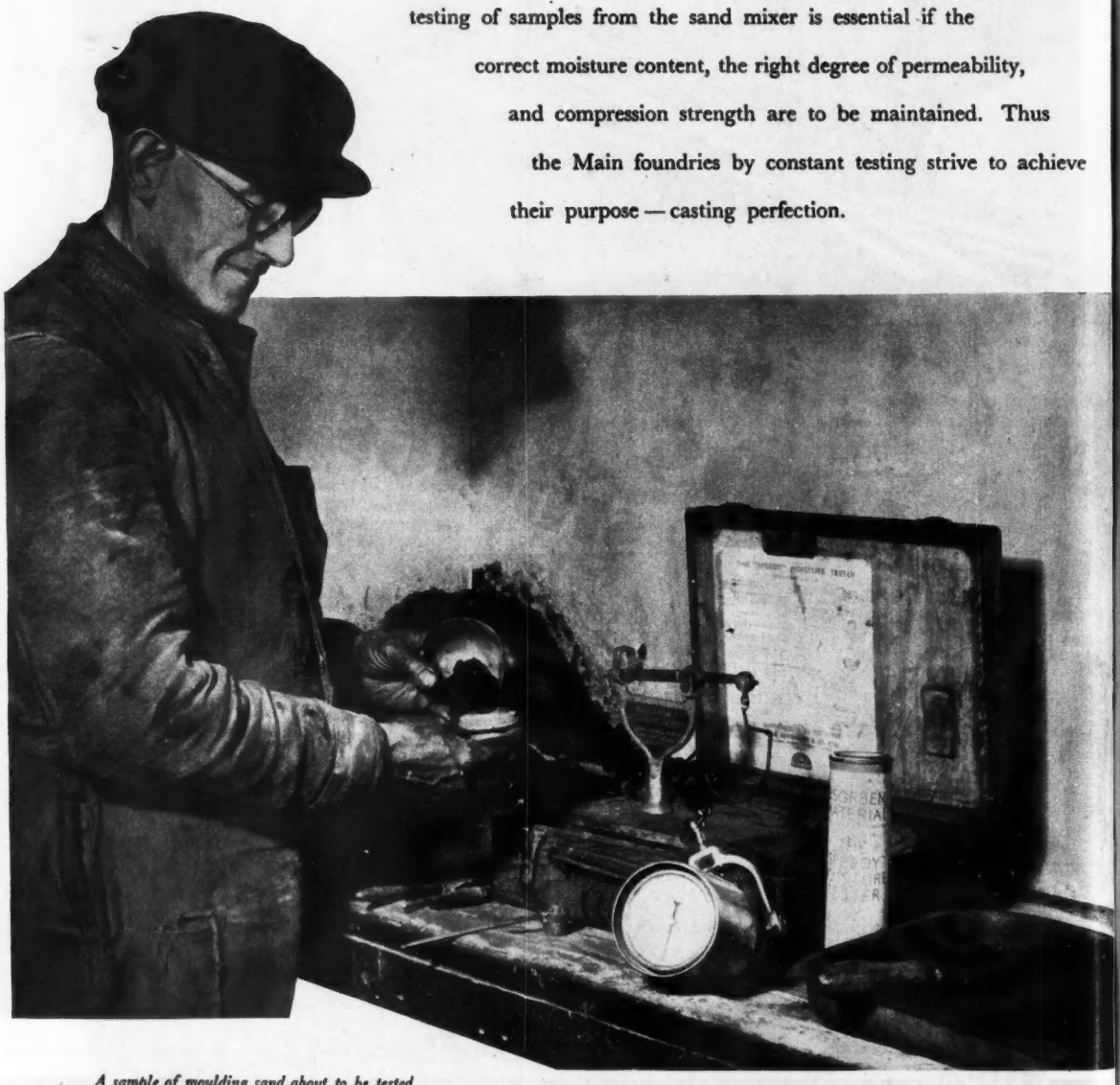

A sample of moulding sand about to be tested for moisture content. This test is done at half-hourly intervals throughout the day.

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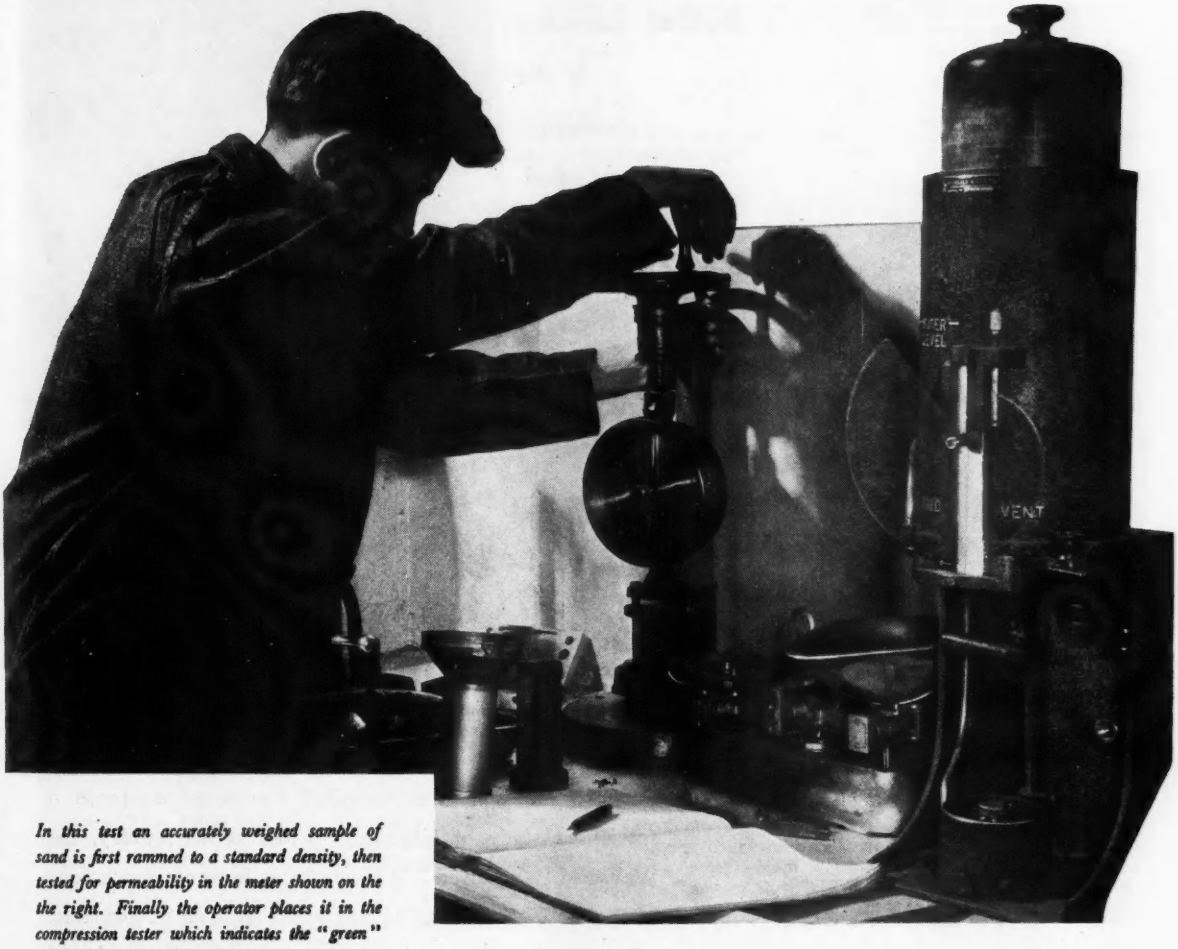

In this test an accurately weighed sample of sand is first rammed to a standard density, then tested for permeability in the meter shown on the the right. Finally the operator places it in the compression tester which indicates the "green" compression strength of the sand.

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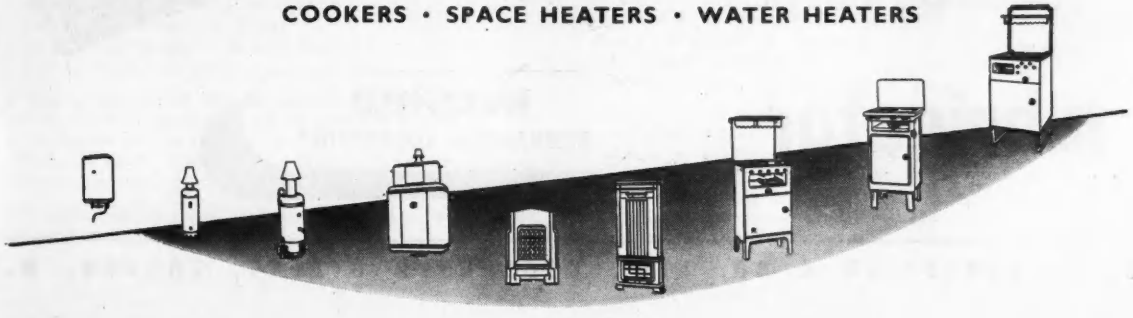

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and speedy method of handling the hot and cooled coke. In this arrangement the boilers will be re-positioned at ground level and the coke car tracks under the chambers will be extended in front of the boilers. The plant will be laid out in two independent halves, each serving two benches of chambers.

A container charged with hot coke will be brought from the chambers to a position near the boilers by the existing rope haulage system. Simultaneously a pusher machine running on independent tracks in front of the boilers will transfer a container of cooled coke from the cooling chamber to a tippler situated at the end of the five cooling units, and then bring the container with hot coke to the empty cooling chamber. The tippler will discharge the cooled coke, by means of two belt conveyors running in an underground tunnel, to two automatically operated skip hoists. The coke will then be elevated by the skip to the existing handling plant for screening.

Large coke (over 2 in.) will be screened at the delivery from the skip for use in the producers, and this coke will be returned to the producer hoppers in the retort house by belt conveyor in an overhead gantry. A duplicate layout for handling the cooled coke from the other half of the retort house will be installed, and in the event of the breakdown, which would preclude the operation of the cooling chambers, wet quenching can be resorted to by bringing into service the existing type of coke skip, which will be modified to discharge the quenched coke on the feed conveyors to the skip hoists.

With the proposed layout, the overall time cycle for handling one container to and from the cooling unit will be reduced by approximately 50% compared with the original design.

It is considered that the difficulties caused by the dryness of the coke can be overcome by treating it with a fine water spray while still warm. An addition of 5% of moisture is normally employed, and this is sufficient to allay dust nuisance and produce a coke generally acceptable to the consumer. It has been claimed that coke which has been dry cooled is stronger, produces less breeze, and gives a higher efficiency of water gas production.

Steam Production and Consumption

It is estimated that on full winter gas production the rate of steam demand during the daytime with the additional load of coaling plants, workshop power, etc., is some 85,000 lb. per hour. This includes the requirements of the gas pumping plant feeding gas into the distribution grid. The steam demand varies, therefore, with the demand for gas at the peak hours, since the steam consumption of this pumping installation varies from 13,000 lb. per hour at the peaks to 2,000 lb. per hour between the peaks. On full production the total steam demand for electric power generation in the day time averages 11,500 lb. per hour and the load factor of the generating plant is 43%.

The demand at night is steadier without the gas pumping and coaling plant loads. The total load includes for full carburetted water gas production of 6.0 mill. cu.ft. per day on the four 1.0 mill. and one 2.0 mill. cu.ft. per day old hand-operated sets, only the large set having a waste heat boiler. The steam demand will vary, therefore, with changes in the rate of carburetted water gas production.

On full output the total steam demand in the daytime of 85,000 lb. per hour is met approximately as follows:—

	lb. per hour
Babcock & Wilcox water tube boiler installation	30,000
Lancashire boilers (tar fired)	32,500
I.V.C. retort house waste heat boilers	20,000
C.W.G. waste heat boiler	2,500

It will be appreciated that the variation in demand is accommodated primarily on the tar-fired Lancashire boilers, and this daily variation can be of the order of 32,500 lb. per hour to 17,500 lb. per hour. The use of tar firing in these circumstances facilitates easy control of this varying demand.

It is estimated that steam production over a year is at present made up as follows:—

Base Load: Waste heat boilers / Water tube boilers	89%
Peak Load: Tar fired Lancashire boilers	11%

Some degree of estimation is unavoidable in the calculation of the overall costs of steam raising in each of the boiler plants. The following figures, however, give a guide to the costs at Southall under existing conditions. The costs for the Sulzer plant are based on figures which were obtained when the plant was last at work.

Costs are expressed in shillings per unit of steam (*i.e.*, 10,000 lb. F. & A. net).

The cost of breeze is taken at 41s. 2d. per ton and oil gas tar at 8d. per gal.

	A Breeze-fired Water Tube Boiler Installation	B Tar-fired Lancashire Boiler Installation	C Retort House W.H. Boilers	D Sulzer Plant Boilers
Nominal steam output capacity	30,000 lb. per hour	36,000 lb. per hour	20,000 lb. per hour	14,500 lb. per hour
Units of steam produced (net)	22,814	4,457	13,729	—
Load factor (on installed plant capacity) ..	78%	12%	65%	—
	Sh. per unit	Sh. per unit	Sh. per unit	Sh. per unit
Cost of water, power, attendance	6.63	9.62	3.73	14.28
Cost of fuel including loading and conveyance	27.76	52.67	—	—
Maintenance	3.40	4.64	2.00	5.00
	37.79	66.93	5.73	19.28
Interest and depreciation on capital	8.15	17.85	4.15	14.00
Total ..	45.94	84.78	9.88	33.28

The overall load factor of the boiler plant is 54% on gross steam production.

If the water tube boilers had to deal with a load of similar characteristics to the tar fired boilers, the capital charges would be very high—i.e., approximately 41s. per unit of steam.

In order to effect a direct comparison, the capital charges given above are calculated on the basis of present-day plant installation costs of the appropriate nominal steam output capacity in each case. Owing to the age of the Lancashire boilers, the capital charges may be considered to have been written off.

(*a*) The nominal rating of each of the two boilers is 15,000 lb. per hour, and the above costs are based on the actual output over six months, adjusted to give the required output per annum.

(*b*) The basis of these costs is the estimated total output of steam per annum to meet the fluctuating demands of 'make-up' steam during that period.

(*c*) Costs based on full output capacity of boilers with retort house fully at work.

(*d*) In the case of the Sulzer plant, the labour required for attendance is equivalent approximately to the labour at present required for the wet quenching of coke. If the reduction of the labour is credited, therefore, to the cost of steam production, the net cost of the latter will be 27.28s. per unit.

Oil Gasification in Horizontal Retorts

To conserve coal supplies following the fuel crisis in the spring of 1947, and also to replace the output of the horizontal retort house while reconstruction was in progress, it was decided to install equipment for the conversion of six settings of horizontal retorts to the oil gasification process which was developed by the former Gas Light and Coke Company.

Many difficult and interesting problems of a research character had to be overcome in the initial stages, but during the winters of 1947-48 and 1948-49, all major difficulties had been overcome and the process worked very smoothly with negligible interruption through breakdowns, and constituted, in very special circumstances, a valuable and reliable unit of gas making plant to replace coal gas manufacture.

Table 2 gives a brief summary of the technical results obtained over the whole period of gas-making, including the initial experimental stage. It should be noted that only on rare occasions was it necessary to have all six sets in operation at the same time.

The tar made, which was of low water content (under 5%), was used as fuel under the Lancashire boilers.

The volume of gas produced on the maximum day (3.22 mill. cu.ft.), when all six sets were in action, compares with a daily output of 1¼ mill. cu.ft. of coal gas from the same number of sets. As the calorific value of the coal gas as made in the retort house is 580 B.Th.U. per cu.ft., the thermal output of six sets when carbonising coal would be 7,250 therms compared with an output of 17,500 therms when using gas oil.

TABLE 2

OIL GASIFICATION IN HORIZONTAL RETORTS

Summary of Technical Results obtained during the complete period of operation, including the experimental stage.

Volume of gas produced	517.8 mill. cu. ft.
Therms produced	2,717,000
Calorific value	536 B.Th.U.
Gas oil used	3 mill. gal.
Tar made	745,000 gal.—equivalent to 25% of the oil gasified
Therms per gal. of oil	0.93
Maximum day	
Volume of gas produced	3.22 mill. cu. ft.
Calorific value	543 B.Th.U.
Therms produced	17,500
Gas oil used	18,600 gal.
Therms per gal. of oil	0.94

It is computed that gas equivalent to that from 40,000 tons of coal was produced.

Typical Analysis of Oil Gas: CO_2, 2.5%; O_2, 0.5%; CO, 10.0%; CnHm, 15.0%; CH_4, 11.5%; C_2H_6, 1.5%; H_2, 3.0%; N_2, 56.0.%

New Carburetted Water Gas Plant

The present carburetted water gas plant consists of four sets each of 1.0 mill. cu.ft. per day capacity, and one set of 2.0 mill. cu.ft. per day. Only the latter set is equipped with a waste heat boiler, and all sets are hand clinkered. The small sets were installed between 1898 and 1900, while the 2 mill. set was put in during 1916, and a waste heat boiler installed in 1929.

Although good technical results are obtained from this plant, the labour force required to operate it at full output is very heavy. Under present conditions each man produces 120,000 cu.ft. of gas per day, whereas on a self-clinkered plant of modern design each man can produce up to eight times this amount. Another important factor is the recruitment of suitable labour to clean the fires of hand-clinkered sets, and the time may not be far distant when it will be difficult to find men to carry out this arduous work.

In 1948 it was decided to install a new carburetted water gas plant of 12.0 mill. cu.ft. per day capacity and it is hoped that the first section of this plant (*i.e.*, 6.0 mill. cu.ft. per day) will be ready for work early next year. The new plant, when fully at work, will restrict the output of the old plant to approximately 3.0 mill. cu.ft. per day on account of available purification area.

The new plant, now being constructed adjacent to the new boiler house, is housed like the latter in a building of utilitarian design, which is steel framed with brick filling matching the brickwork of the boiler house.

The plant consists of three sets of Humphreys and Glasgow back-run dry-sealed generators, each set consisting of a generator with automatic fuel feed and ash removal, carburettor, superheater, waste heat boiler and wash-box. The latter is elevated, and has a conical bottom with sludge discharge valve. Two sets have each a nominal capacity of 3.0 mill cu.ft. of gas per day, while the third set will produce 6.0 mill. cu.ft. per day, and is one of the largest individual units yet proposed for the Board. The diameter of the generator is 11 ft., and this set will be equipped with a horizontal waste heat boiler. With a set of this capacity there are advantages in capital and labour costs, and it is considered that this unit will also be satisfactory from the point of view of operating efficiency.

On each generator the grate drive is intermittent and the frequency of operation is varied by an automatic timing device. This enables a quick adjustment to be made to the grate speed to suit the fuel conditions in the generator. Ash is discharged from the generator clinker pockets into stillages which are raised by the platform of a Lister auto-truck and conveyed to the automatic ash handling plant, consisting of skip hoist and reinforced concrete storage hopper.

The steam system for the whole plant operates at three distinct pressures. High pressure steam at 160 lb. per sq. in. to meet all power requirements of the plant is produced in the waste heat boilers, and when required, passes through a reducing valve into the generator boiler steam connecting main. Intermediate pressure steam from the annular generator boilers at 40 lb. per sq. in. feeds into the process main through a reducing valve. Exhaust steam at 14-20 lb. per sq. in. from the steam turbine driven blowers, exhausters, and liquor circulating pumps passes to a Ruths low pressure steam accumulator whenever the total available exhaust steam exceeds the requirements of the generators. This stored steam is returned, when required for gas-making, to the process steam system.

Air is applied to the generators at 42 in. W.G. by two turbine driven blowers, and the exhausting plant comprises two turbine driven turbo exhausters. Each pair of machines is required to run when all three sets are working, and there is therefore no standby plant available. It is considered that following a thorough overhaul of plant during the summer months it should not be necessary to install additional units to act as standby for this type of reliable machine.

The plant is automatically operated by hydraulic power at 750 lb. per sq. in.

Peak Load Oil Gas Plant

In April, 1948, a paper was presented to the Gas Research Board* describing a process for the manufacture of peak load gas by the partial combustion of gas oil. This process had been developed on a pilot plant scale by the Research Department of the former Gas Light and Coke Company, and following the investigation described it was decided that two full-scale plants using this process should be erected, the second and larger one of which was put to work at Southall in February.

This plant, which consists of two generators with a total nominal capacity of 3.0 mill. cu.ft. per day at 520 B.Th.U., possesses several advantages which made its installation at Southall desirable in view of the geographical position of the works in relation to the western grid and the peak-load demands that are required of it. These advantages may be summarised as follows:—

(i) Low capital cost of the plant.
(ii) Low labour requirements.
(iii) Simple purification plant.
(iv) Rapid production of full gas output from cold.

The process may be described as the controlled combustion of gas oil using approximately 10% of the air required for its complete combustion. Fig. 4 shows a flow diagram of the process.

Gas oil heated to 300°C. in the tar fired preheater AB is pumped at 160 lb. per sq. in. pressure to the top of the thermally insulated generator C where it is delivered through a spray and evaporated in the reaction tube F.

Process air is supplied by fan D through an air/gas heat exchanger E which is a simple annular jacket surrounding the outgoing make gas main from the generator. This air is

(*Continued on p. 162*)

* Communication G.R.B.38. The Production of Peak-Load Gas by the Partial Combustion of Oil. By M. Maccormac, D.I.C., Ph.D.

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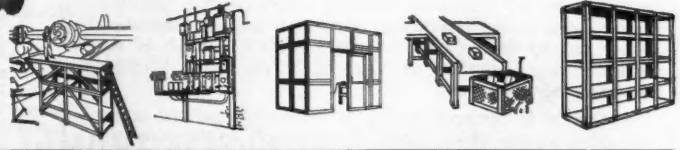

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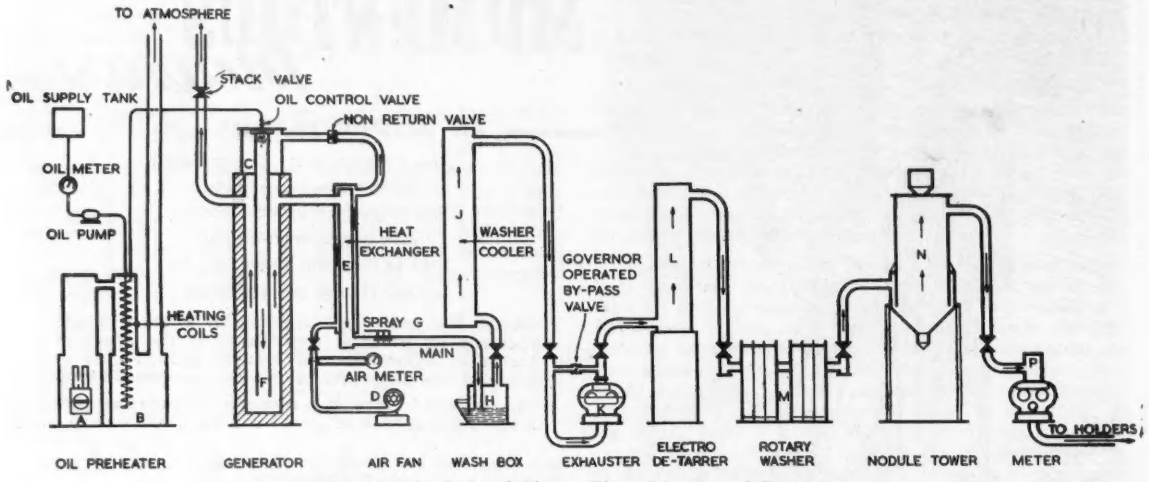


Fig. 4.— Peak Load Plant. Flow Diagram of Process.

delivered at a temperature of 200°C. to the air chamber on top of the generator and enters the reaction tube through guide vanes arranged tangentially to the inner face of the tube. This arrangement imparts a tangential velocity to the pre-heated air, which promotes efficient mixing of the air and oil. The superheated oil partially vaporises as it leaves the spray, but the unevaporated portions impinge on the sides of the reaction tube and, running down the inside of the tube as a thin film, are evaporated into the air stream by heat transferred through the walls from the hot combustion products passing up the outside. This film of oil therefore keeps the tube cool and delays ignition until evaporation is completed.

After passing up the generator in the annulus surrounding the reaction tube, and then through the heat exchanger, the hot gases leave the base of the air/gas heat exchanger containing a considerable proportion of tar vapours formed from the aromatic and naphthenic constituents of the gas oil, and are cooled in a spray main G by being sprayed with tar. This also has the effect of drying the circulated tar and raising its flash point to a satisfactory figure.

From the sealed wash-box H, the gas flows through a washer cooler tower J packed with Silver type metal grids where the liquor and the light tar of low flash point is condensed, and these, together with the circulating liquor, flow into a circulating tank, which overflows into the tar separator. This circulating tank also receives light tar from the detarrer. The gas then passes from the washer-cooler to the exhauster K, electro-detarrer L, rotary washer M containing an alkali wash, followed by oxide nodule tower N for removal of hydrogen sulphide, and finally to the station meter P.

Some of the tar produced is used on the plant as fuel for raising heats in the generator preparatory to gas making, and for preheating the oil; the remainder is used as fuel under the Lancashire boilers.

The liquor produced by the combustion process condenses in the washer cooler and contains considerable quantities of aldehydes and acidic bodies. To avoid corrosion troubles the circulating liquor is kept alkaline by the addition of the exhaust liquor from the rotary washer, the feed into this washer being a 5% soda-ash solution, which, together with the liquor made in the combustion process, is used as circulating liquor on the washer cooler tower. The alkali wash in the rotary washer neutralises the acids in the gas before it enters the oxide nodule towers.

The plant is equipped with a hydraulically operated safety shut-down system which, should the oil supply to the generator fail, puts the plant on standby by (1) opening the stack, (2) cutting off the fuel supply to the oil pre-heater, and (3) cutting off the oil supply to the generator. Circulation of oil through the pre-heaters is maintained until the brickwork is cool.

On a plant of this type there is a possibility that air may be blown through the detarrer. For example, this might happen if the air/gas heat exchangers were damaged by corrosion, or if the flame in the generator were extinguished by the use of an abnormally low air-oil ratio for too long. To ensure against this, the gas is sampled soon after leaving the washbox, and after being cooled and detarred the sample is fed to a special burner which measures its combustion characteristics. If the gas does not burn in the correct manner on this burner, the electric circuit is broken, and the detarrer is immediately switched off.*

During the period February 8 to March 5, one generator was worked intermittently for 332 hours while operators were being trained and adjustments were being made on the plant. The plant was started from cold 12 times, on some occasions in less than one hour, and the following results were obtained over the period stated.

TABLE 3

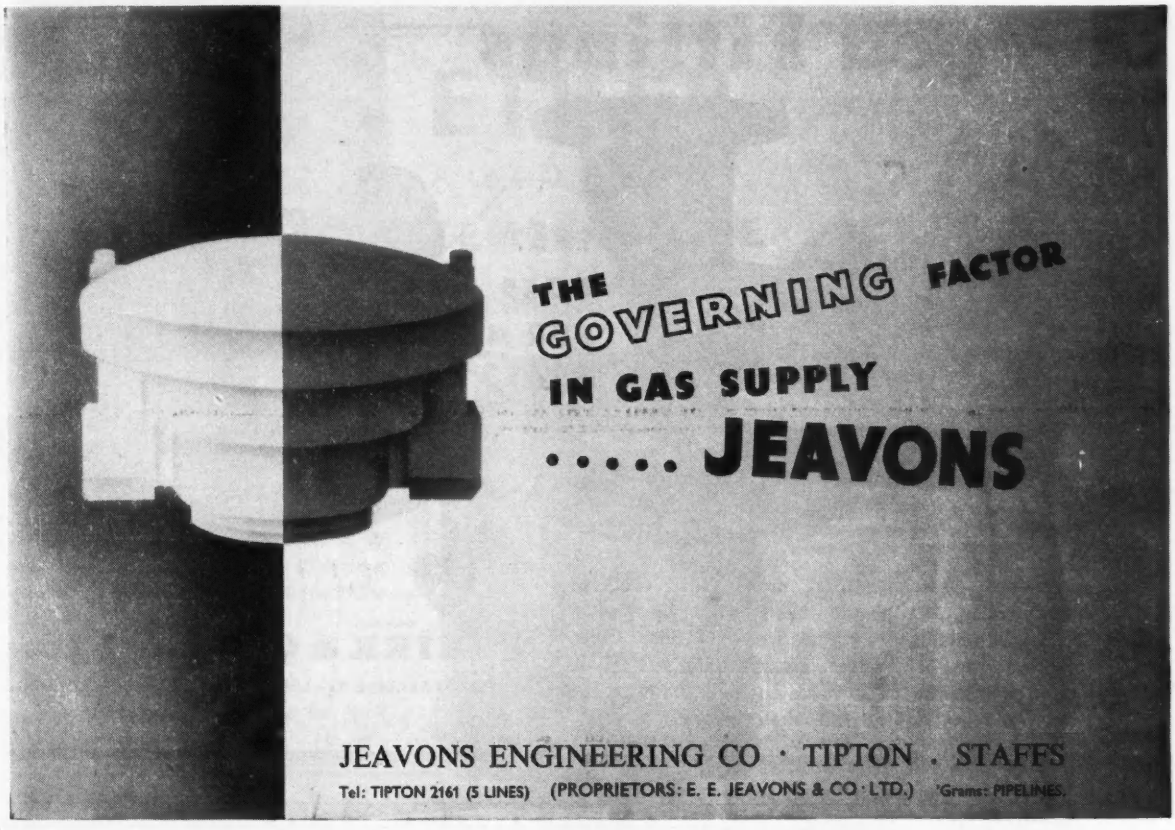
Oil used	97,750 gal.
Gas made	21,849,000 cu. ft.
Average calorific value	514 B.Th.U.
Gas made	111,820 therms
Tar produced	22,000 gal.
Tar used to preheat oil and raise generators heats	5,500 gal.
Tar available for general works use	16,500 gal.
Tar yield per gal. oil	0.22 gal.
Steam used	10.0 lb./1,000 cu. ft. of gas made
Electricity used	0.6 units per 1,000 cu ft. of gas made
Therms per gal. of oil	1.15

* Patents applied for 4038/49; 28223/50; 14791/50.

METHANE-NITROGEN MIXTURES

THE rapid rate at which natural gas reserves are being dedicated to satisfy the ever-increasing demand forecasts the necessity for using supplies of increasingly higher nitrogen content. Proposals have been made to remove part or all of the nitrogen prior to transmission, as a means of lowering pumping costs by increasing the effective pipeline thermal carrying capacity. Of added interest is the storage of natural gas as liquid, which requires the separation of nitrogen in the liquefaction process to increase the effective capacity of storage systems and to avoid fractionation and consequent change of composition and heating value upon gasification.

Reliable, adequate vapour-liquid phase data on the methane-nitrogen system, necessary for engineering design of nitrogen-removal equipment, are presented in 'Physical-Chemical Properties of Methane-Nitrogen Mixtures,' Institute of Gas Technology Research Bulletin No. 17, by O. T. Bloomer and J. D. Parent. The studies reported in it were initiated in 1947 under the Institute's basic research programme, and since 1950 have been sponsored by the Technical and Research Committee, Natural Gas Department, of the American Gas Association.


THE
GOVERNING FACTOR
IN GAS SUPPLY
..... JEAVONS
JEAVONS ENGINEERING CO · TIPTON · STAFFS
Tel: TIPTON 2161 (5 LINES) (PROPRIETORS: E. E. JEAVONS & CO LTD.) 'Grams: PIPELINES.

"Ah-Civilized!"

Plumber Leadbeater's face went white as he saw the sinister snout of the blowpipe sticking out from the undergrowth. There was a whoosh of air and our plumber's bowler was pinned to the tree as sure as a dart on the board at the local.

Suddenly he recognised the black-faced William Tell peering at him from the jungle creepers and shouted, "It's me your old pal Leadbeater that fixed up Chief Puffaway's hut with modern British plumbing!"

Unfixing his bowler from the bark Leadbeater laughed when he saw the blowpipe fixed with Securex. "So you've become civilised too," he exclaimed heartily and slapping the back of the beaming warrior.

"Me pinch Securex from big Chief's hut - fixum blowpipe - velly good," replied the seven foot stalwart sticking out his chest.

"Come on," said Leadbeater, "take me to the village - guess your chief's plumbing is badly in need of more Securex."

Civilisation has been described as French cooking and British plumbing. Today the symbol of the civilised (and civil) British plumber is Securex, the joint that saves time, trouble and temper. Only two minutes to make a joint as tight as a drum. Please write for full information.

SECUREX
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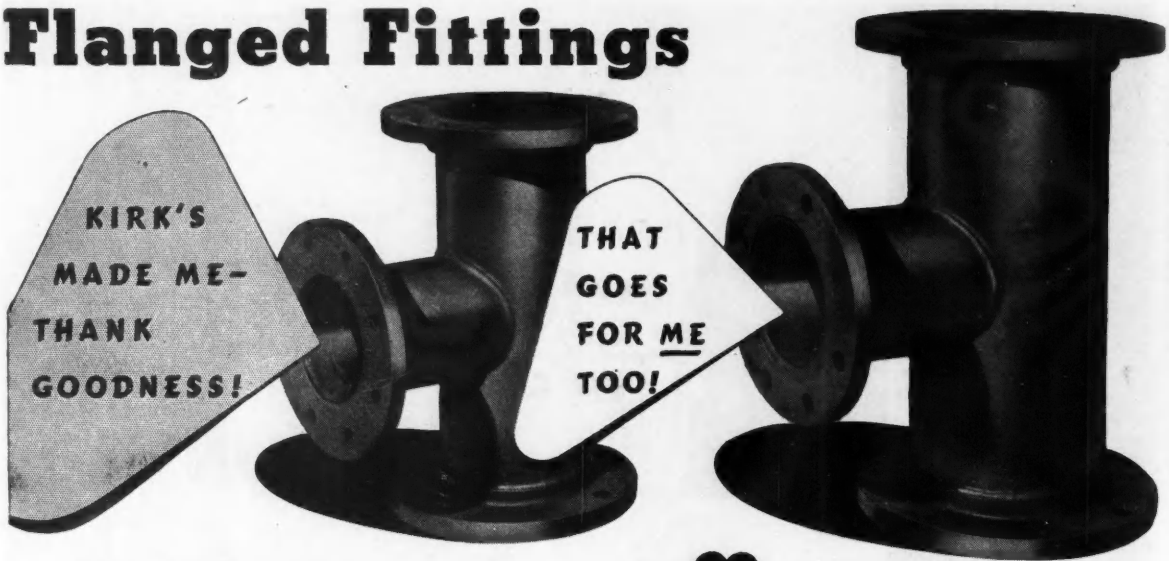
Gylemuir Works, Corstorphine, Edinburgh, 12, Scotland
Telephone: Corstorphine 66641-2 Telegrams: "Solderless, Edinburgh."
LONDON OFFICE: **NORFOLK HOUSE, LAURENCE POUNTNEY HILL, E.C.4**
Telephone: Mansion House 5700 Telegrams: "Yutaka Cannon, London."

Flanged Fittings



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INSULATING BRICKS, RECUPERATOR TUBES, SPECIAL SEMI-SILICA QUALITY FOR SEGMENTAL RETORTS WITH NO EXPANSION OR CONTRACTION AT 1400° C

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Fire Bricks, Lumps & Tiles

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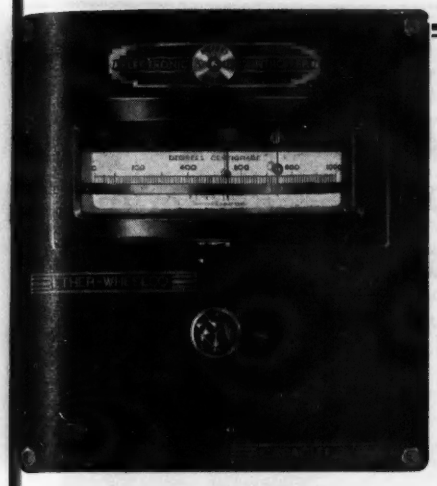

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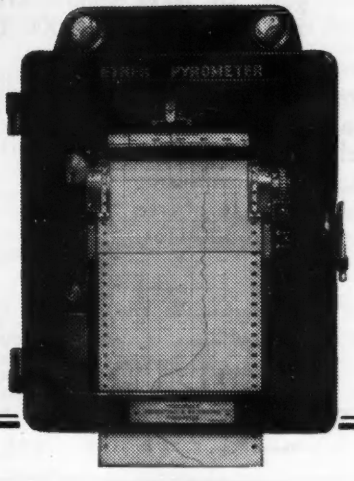

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This instrument utilises electronic action to achieve rapid and accurate control of furnace temperature. Supplied for On, Off, High, Low and Proportional Control.

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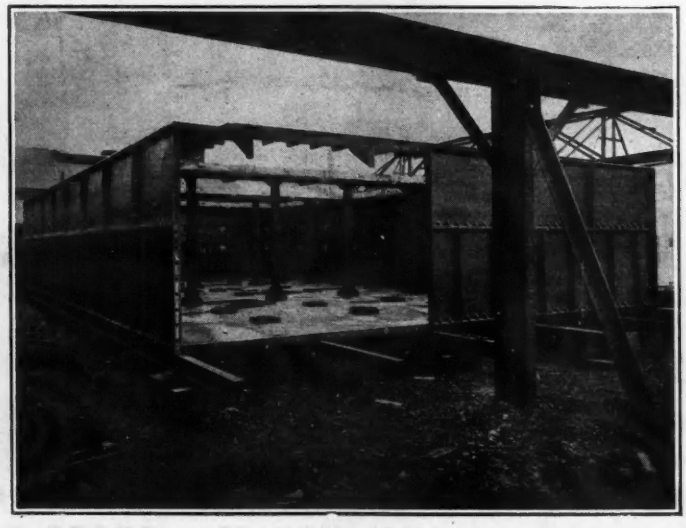

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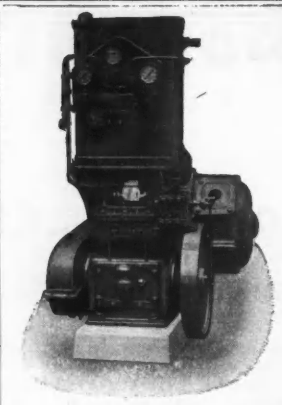

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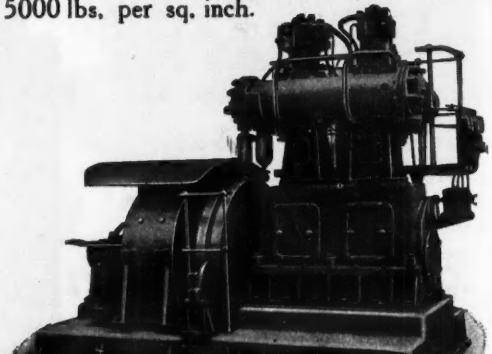
pressures up to 5,000 lbs. per sq. in.

The illustrations show two high pressure gas compressors which we made recently to order. As specialists in the design and manufacture of compressors for both air and gases, we make compressors for a wide range of capacity and pressure up to 5000 lbs. per sq. inch.

The compressor shown above has a capacity of 25 cu. ft. of free hydrogen per minute compressed to 3000 lbs./sq. inch. The illustration on the right shows a four-stage compressor with a delivered capacity of 200 cu. ft. of free town's gas per minute compressed to 5000 lbs. per sq. inch.



For full information regarding gas compressors, write, giving particulars of the duty required, to—

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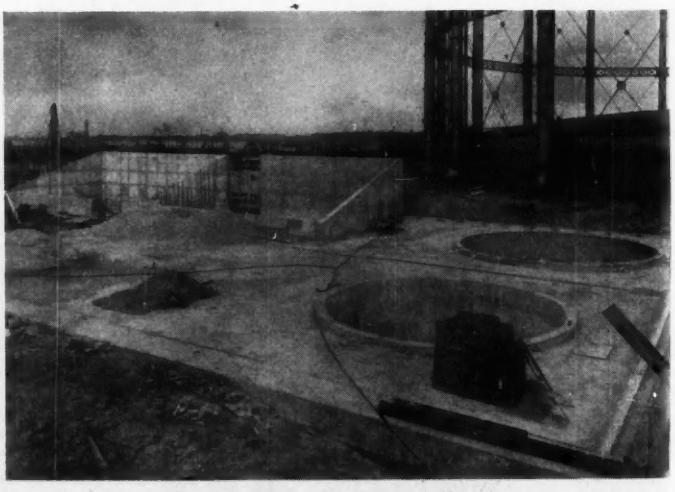
RANELAGH WORKS, IPSWICH
Telegrams: "REAVELL, IPSWICH." Phone Nos. 2124 & 2125

CIVIL ENGINEERING **DOUGLAS** BUILDING

Purifier Installations for West Midlands Gas Board



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GAS MAINS RAILWAY SIDINGS ROADS ETC.
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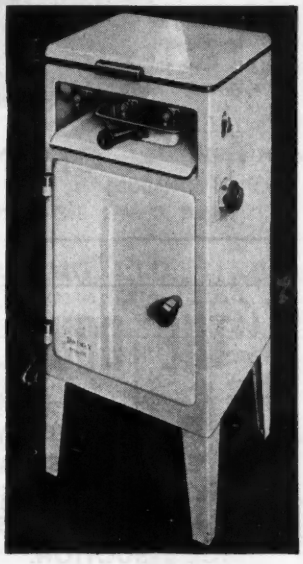
For small Kitchens and Flats...

The

Dainty

MINOR



This efficient little cooker of large capacity is made especially for small kitchens and flats.

Its cast iron construction ensures durability and low maintenance cost.

For hire purchase or for simple hire. The 'Dainty' Minor is ideal.

Approved and adopted by leading gas boards.

Leaflet fully describing this efficient, attractive and economical cooker will gladly be sent.

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Modern Gas Production Needs This

The modern trend is to effect economy in gas production and operation by creating large productive units with wide distribution networks. Large schemes can operate efficiently only by means of centralised information and control.

Evershed instrumentation meets this need. Its many systems of remote indication and control—each one designed for a specific purpose—enable the gas engineer to exercise adequate supervision of an undertaking by collecting and co-ordinating all relevant data at one central point.

Examples of the advantages of Evershed instrumentation are:

- **Remote Indication of Gas Holder Volume**
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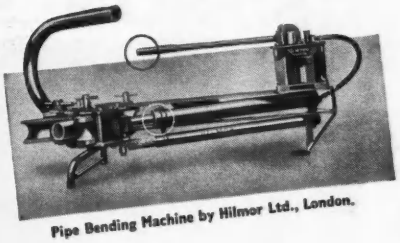
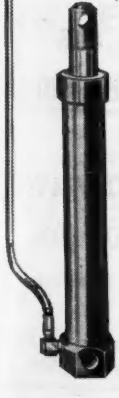
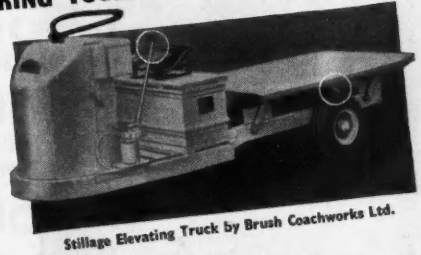


Pipe Bending Machine by Hilmor Ltd., London.

Hydratruck by Power Jacks Ltd., London





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The above illustrations are typical of the wide application of Power Jacks Hydraulic Equipment to lifting and handling problems. Our Technical Advice Service, either to assist towards or provide a complete layout, is at your disposal. May we send you particulars?

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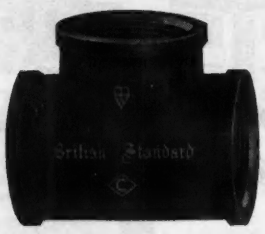

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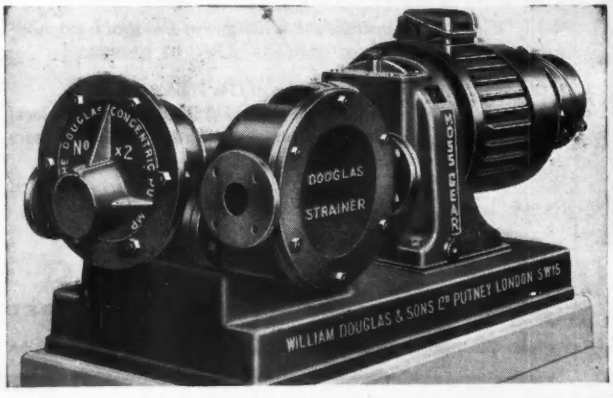

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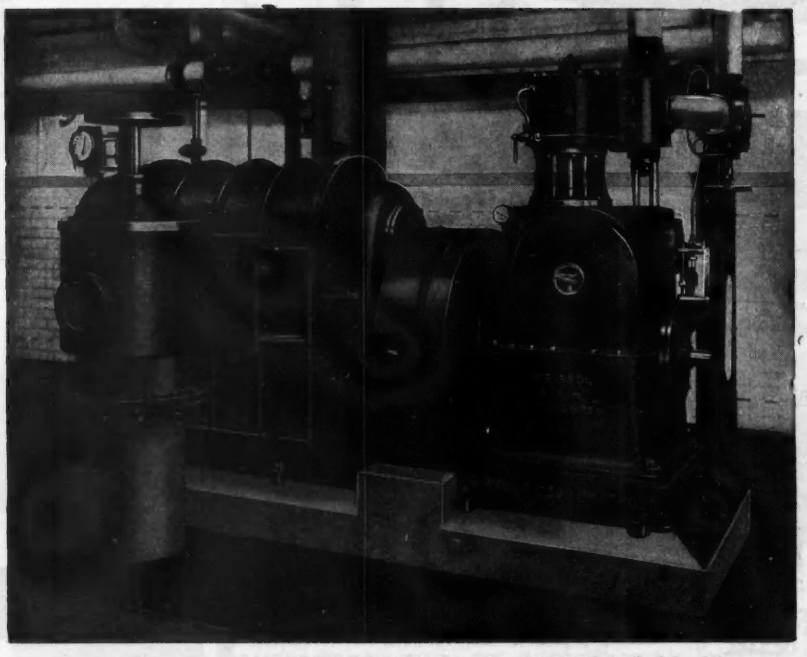

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The "Gas Journal" is published every Wednesday, price 1/3d.; by post 1/5d.

Subscription Rates : Home and Empire :- 52/- per annum ; Foreign :- 60/- per annum. (Both payable in advance.) A copy of the "Gas Journal" Calendar & Directory is presented each year to continuous subscribers.

Classified Advertisements : All small classified advertisements are charged at 1/9 per line (approx. 7 words) - minimum charge 10/6. A Box Number address occupies 2 lines, and a further 6d. is charged towards cost of postage on replies. Copy must be received by first post on Monday to ensure insertion in that week's Journal.

Displayed Advertisements : Rates obtainable on application to the Business Manager. Change of copy for displayed spaces must be received 14 days prior to publication if proofs are required. Type area of inside pages 10" deep x 7" wide; block screen 120.

BUSINESS MANAGER : S. T. CULLEN

MIDLANDS OFFICE : 10, Union Street, Birmingham.

NORTHERN MANAGER : W. Q. Foster, 33, St. Helens Road, Harrogate. 'Phone : Harrogate 84291.

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The World's Fastest Fire Extinguishers —for every Fire Risk
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NATURAL BRITISH.

BOG (DUTCH and DANISH) ORE.

SPENT OXIDE.

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Telegrams : "BRIPURIMAT"

Telephone : 59086

APPOINTMENTS VACANT

The engagement of persons answering these advertisements must be made through a Local Office of the Ministry of Labour or a Scheduled Employment Agency if the applicant is a man aged 18-64 inclusive or a woman aged 18-59 inclusive unless he or she, or the employment, is excepted from the provisions of the Notification of Vacancies Order, 1952.

DOMESTIC APPLIANCE DEVELOPMENT ENGINEER. A substantial Midlands firm require the services of a qualified ENGINEER to take complete charge of a Department in which it is intended to design and manufacture small Gas Appliances for domestic use. The post offers unlimited scope for advancement to a keen and energetic man who has a first class knowledge of design and development in this field.

Applications should be typewritten and give full particulars of age, experience, qualification, commencing salary etc, to : No. 115, *Gas Journal*, 11, Bolt Court, Fleet Street, London, E.C.4.

AN OFFICER is required to take charge of the DOMESTIC HEATING and COOKING APPLIANCE DEVELOPMENT and TESTING LABORATORIES of the Northern Gas Board at Newcastle-on-Tyne. Applicants should preferably have had experience with an Appliance Manufacturer or in a similar Laboratory and have an adequate chemical and/or engineering technical training. Commencing salary will be between £720 and £845 according to qualifications and experience. Applications containing full details of qualifications and past experience should be addressed to the Divisional General Manager, Newcastle Division, 30, Grainger Street, Newcastle-on-Tyne.

NORTH EASTERN GAS BOARD

BRADFORD GROUP

BIRKSHALL WORKS

APPOINTMENT OF
RETORT SETTER FOREMAN

APPLICATIONS are invited for the above position at the Birkshall Works. The Salary will be in accordance with the scales of the National Joint Standing Committee for Intermediate Grades, Grade VII (Prov. A.) £455 to £500 per annum.

Applicants should have experience in the building and repairs of vertical and horizontal retorts, also refractory repairs in connection with C.W.G. Plants, together with a sound knowledge of general building repairs, alterations and all work relative to the building trade.

The successful applicant must be capable of taking charge of all personnel in the section and will be responsible to the Management for the supervision of any work of this nature within the Bradford Group.

Applicants should note that under the provisions of the Notification of Vacancies Order 1952, it will be necessary to secure the approval of the Ministry of Labour & National Service to any appointment.

Applications stating age, training and experience should be sent to the Group General Manager, North Eastern Gas Board, Bradford Group, Britannia House, Bradford, so as to arrive not later than 10 days after date of publication.

J. C. GARDNER,
Secretary.

Bridge Street,
Leeds, 2.
July 10, 1952.

WEST MIDLANDS GAS BOARD

WARWICKSHIRE DIVISION

ENGINEER AND MANAGER

LEAMINGTON SPA DISTRICT

APPLICATIONS are invited from qualified Gas Engineers for the above appointment.

Candidates must have a sound knowledge and wide practical experience in the production and distribution of gas in accordance with modern practice, and in administration.

The commencing salary will be £1,250 per annum.

The appointment will be subject to such superannuation regulations as the Board may, in due course, adopt, and the successful applicant may be required to pass a medical examination.

Applications, stating age, training, qualifications and experience, together with the names of two referees, should be addressed to the Industrial Relations Officer, West Midlands Gas Board, 6, Augustus Road, Edgbaston, Birmingham, 15, to reach him within fifteen days of the appearance of this advertisement.

F. H. CURETON,
Secretary to the Board.

(*Classified advertisements continued on Supplement* 4)

APPOINTMENTS VACANT (ctd.)

NORTH WESTERN GAS BOARD

PRESTON GROUP

SHIFT ENGINEER

LOSTOCK HALL WORKS, PRESTON

APPLICATIONS are invited for the above position at a salary within Grade A.P.T. VII (£525-£605 per annum).

Applicants should have practical experience in the operation and maintenance of vertical retorts and C.W.G. plants and be capable of supervising general Gas Works plant operations. A modern house will be available at a reasonable rent.

The successful applicant may be required to pass a medical examination and to subscribe to such superannuation scheme as the Board may adopt.

Detailed applications, giving the names of two referees, should reach the General Manager, North Western Gas Board, (Preston Group), 108, Fishergate, Preston, within 7 days.

NORTH WESTERN GAS BOARD

LANCASTER-MORECAMBE GROUP

TECHNICAL ASSISTANT (CARBONISING)

LANCASTER WORKS

APPLICATIONS are invited for the above position at a salary within Grade A.P.T. VII (£525-£605 per annum).

Applicants should have experience of technical control and operation of Carbonising Plant and experience with chamber ovens will be an advantage.

The successful applicant may be required to pass a medical examination and to subscribe to such superannuation scheme as the Board may adopt.

Detailed applications, endorsed "Technical Assistant," giving the names of two referees, should reach the General Manager, North Western Gas Board, (Lancaster-Morecambe Group), Gas Works, Lancaster, within 14 days.

NORTH WESTERN GAS BOARD

BLACKBURN GROUP

DISTRICT DISTRIBUTING ENGINEER

APPLICATIONS are invited for the above position at a salary within Grade A.P.T. VIII (£565-£645 per annum).

The successful applicant will be responsible to the Group Distributing Engineer for all aspects of the distributing of gas, including the control of mainlaying staff and the supervision of mainlaying work carried out by contractors within the district, together with the preparation of schemes for extension or modification of the existing mains network.

Applicants should have had practical experience and preferably should possess the Higher Grade Certificate of the Institution of Gas Engineers in Gas Engineering (Supply).

The successful applicant may be required to pass a medical examination, and to subscribe to such superannuation scheme as the Board may adopt.

Detailed applications, with the names of two referees, should reach the General Manager, North Western Gas Board, (Blackburn Group), Cardwell Place, Blackburn, within 12 days.

NORTH WESTERN GAS BOARD

NORTH CHESHIRE GROUP

GROUP DISTRIBUTING ENGINEER

APPLICATIONS are invited from suitably qualified persons for the above position at a salary of £1,300 per annum.

Applicants should be experienced in all aspects of gas distribution by both high and low pressure, in the upervision of new schemes, and in the maintenance and operation of existing systems.

The successful applicant will be directly responsible to the Group General Manager for the organisation, control and planning of the distribution system and must be capable of preparing specifications and estimates for distribution works and plant.

The successful applicant may be required to pass a medical examination and to subscribe to such superannuation scheme as the Board may adopt.

Detailed applications, endorsed "Group Distributing Engineer" giving the names of two referees, should reach the Secretary, North Western Gas Board, 60 Whitworth Street, Manchester, 1, within fourteen days.

NORTH WESTERN GAS BOARD

SOUTH LANCASHIRE GROUP

DISTRICT SERVICE MANAGER

WIDNES DISTRICT

APPLICATIONS are invited for the above position at a salary within Grade A.P.T. X (£645 to £745 per annum).

The successful applicant will be responsible to the General Manager for the sales and service personnel operating in the district. He may be required to pass a medical examination and to subscribe to such superannuation scheme as the Board may adopt.

Detailed applications, giving the names of two referees, should reach the General Manager, North Western Gas Board, (South Lancashire Group), Radiant House, St. Helens, within 14 days.

NORTH WESTERN GAS BOARD

NORTH CHESHIRE GROUP

APPLICATIONS are invited from suitably qualified persons for the following positions at the Portwood Works, Stockport:—

ASSISTANT CHEMIST (Salary within Grade A.P.T. VI, £475-£555 per annum).

Candidates should possess a recognised qualification in applied chemistry and be able to exercise chemical control, under supervision of gas manufacturing and by-product processes. A previous knowledge of the gas industry will be an advantage but is not essential.

TECHNICAL ASSISTANT (Salary within Grade A.P.T. VI, £475-£555 per annum).

Candidates should have experience in the technical control and operation of gasworks plant and processes, including Vertical Retorts, C.W.G., Concentrated Liquor and Benzole Plants. Possession of the Higher Grade Certificate of the Institution of Gas Engineers or its equivalent will be an advantage.

The successful applicants may be required to pass a medical examination and to subscribe to such superannuation scheme as the Board may adopt.

Detailed applications, giving the names of two referees, should reach the General Manager, North Western Gas Board (North Cheshire Group), Gas Works, Portwood, Stockport, within fourteen days.

APPLICATIONS are invited for the position of SENIOR DRAUGHTSMAN with a Company in the Midlands specialising in the manufacture and erection of Gas Works plant, oil storage tanks, and general jobbing foundry work. Applicants must be between 25 to 40 years of age, and corporate members of either the Institution of Civil, Structural, or Mechanical Engineers, or hold an Engineering Degree. Previous experience with Gas Works Contractors is essential, and knowledge of foundry work is desirable. The position has good prospects of future advancement. Small modern house will be available shortly at reasonable rent. Applicants to state salary required. Strict secrecy will be observed. Apply: No. 116, *Gas Journal*, 11, Bolt Court, Fleet Street, London, E.C.4.

SCOTTISH GAS BOARD

LANARKSHIRE GROUP

SENIOR TECHNICAL ENGINEERING ASSISTANT

APPLICATIONS are invited from suitably qualified persons for the position of SENIOR TECHNICAL ENGINEERING ASSISTANT.

The successful applicant will be responsible for the preparation of specifications, and supervision of drawing office and site work from planning stage to completion, covering generally Works engineering projects, constructions and services.

Applicants are required to possess the Higher Grade Certificate in Gas Engineering (Manufacture), or Higher National Certificate (Mechanical or Civil), or equivalent qualification, and preference will be given to candidate with experience in Gasworks practice, or with a contractor specialising in gas or chemical engineering.

The salary scale will be A.P.T. XI £670 to £795 per annum, and placing on the scale will be in accordance with experience and qualifications. A house will be available at a reasonable rental.

The successful candidate will be required to pass a medical examination and will be subject to the provision of any superannuation scheme which the Board may introduce.

Applications stating age, qualifications, present position and previous training and experience, together with the names of not less than two referees should reach the undersigned within fourteen days of the appearance of this Notice.

FRED R. MITCHELL,
Group Manager.

Gas Office,
Uddingston,
Lanarkshire.
July, 1952.

SCOTTISH GAS BOARD

DUNDEE GROUP

DUNDEE UNDERTAKING

APPLICATIONS are invited from suitably qualified persons for the following appointments:—

(*a*) MANUFACTURE

(1) SENIOR TECHNICAL ASSISTANT experienced in Maintenance and Development of all Gas Works Plant in District Holder and Governor Stations, Design of Works Layout. Salary Scale:—Grade X (Provincial A) (£645-£745) with placing according to qualifications and experience. Candidates should possess the Higher National Certificate, or appropriate equivalent qualifications of the Institutions of Gas, Civil, Mechanical, and/or Structural Engineers.

(2) TECHNICAL ASSISTANT (CONSTRUCTION) experienced in Layout of Works Plans, Preparation of Drawings, Specifications, Estimates for new Plant. Supervision of erection of new Plant.

Salary Scale:—Grade VII/VIII (Provincial A) (£525-£645) with placing according to qualifications and experience.

Candidates should possess the Higher National Certificate or appropriate equivalent qualifications of the Institutions of Gas, Civil, and/or Structural Engineers.

(3) TECHNICAL ASSISTANT (LABORATORY) experienced in General Laboratory Duties including the testing of Gas, Coal and Spent Oxide and other By-Products of Gas Manufacture.

Salary Scale:—Grade I-VI (Provincial 'A') (£160-£555) with placing according to qualifications and experience. Candidates should possess the Leaving Certificate of the Scottish Education Department or equivalent and the Ordinary National Certificate of the Institutions of Gas and/or Chemical Engineers and/or the Royal Institute of Chemistry or equivalent.

(*b*) DISTRIBUTION

(1) ASSISTANT SUPERINTENDENT (MAINS) experienced in the Laying and Maintenance of Mains and Services, Design of Mains Developments.

Salary Scale:—Grade IX (Provincial 'A') (£595-£695) with placing according to qualifications and experience. Candidates should possess the Higher National Certificate of the Institution of Gas Engineers or an appropriate equivalent qualification.

(2) TECHNICAL ASSISTANT (MAINS) experienced in the preparation of Specifications, Drawings and Estimates for Mains and Services Layouts.

Salary Scale:—Grade VII-VIII (Provincial 'A') (£525-£645) with placing according to qualifications and experience. Candidates should possess certificates as in (*b*) (1) above.

(3) TECHNICAL ASSISTANT (INDUSTRIAL) experienced in the Sale, Fitting and Maintenance of Industrial Appliances, Design of Industrial Installations including Domestic and Commercial Central Heating.

Salary Scale:—Grade VII-VIII (Provincial 'A') (£525-£645) with placing according to qualifications and experience. Candidates should possess certificates as in (*b*) (1) above.

(4) JUNIOR TECHNICAL ASSISTANT (INDUSTRIAL) experienced to lesser degree as (*b*) (3).

Salary Scale:—Grade I-VI (Provincial 'A') (£160-£555) with placing according to qualifications and experience.

Candidates should possess the Leaving Certificate of the Scottish Education Department or equivalent and the Ordinary National Certificate of the Institution of Gas Engineers or the equivalent.

(5) SHOWROOM SUPERVISOR experienced in the Sale of Domestic and Commercial Appliances, Window Dressing, Exhibitions and Demonstrations, control of Showroom Staff.

Salary Scale:—Grade VI (Provincial 'A') (£475-£555).

Candidates should possess certificates as in (*b*) (4) above.

Applications stating age, education, training, qualifications and experience and whether present post is superannuated should reach the undersigned within 14 days of date of publication of this advertisement.

W. S. JOHNSTON,
Group Manager.

Gas Works,
50, East Dock Street,
DUNDEE.
July 4, 1952.

PLANT WANTED

WANTED:—REGULAR SCRAP GAS METERS AND PARTS. Best prices paid. Offers to:—Mitcham Smelters Ltd., Red House Road, Croydon, Surrey. *Tel.*: THOrnton Heath 1033, (Private Branch Exchange).

PUBLICATIONS

GAS ACCOUNT CALCULATORS

SUPPLIED either by Price per Therm or Thousand, for any specified Calorific Value, in book form, office charts, or pocket charts for Meter Inspectors, printed in clear type. Write for particulars to F. H. WAKELIN, LTD., Calculator Specialists, 354, WHEELER STREET, BIRMINGHAM.

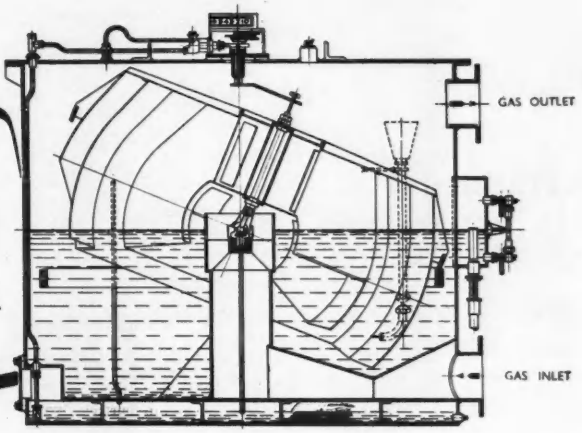
'Phone: Northern 0989. 'Grams: Reckoners, B'ham.

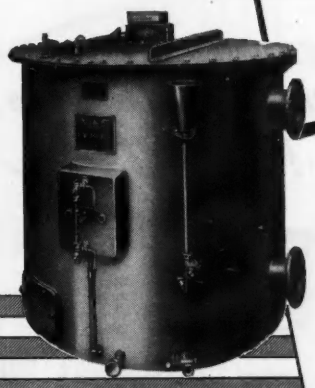
Industrial Consumers METERS

B M

The AUTO-SEAL

MAINTAINS CORRECT OIL LEVEL





The Auto-seal now fitted to "B.M." Meters provides for the automatic maintenance of the oil seal level. Thus, the periodic attention of the meter has been reduced to an absolute minimum. "B.M." Meters are made in capacities from 3,000 to 60,000 cu. ft. per hour.

FOUNDED 1850
HOLMES
HUDDERSFIELD

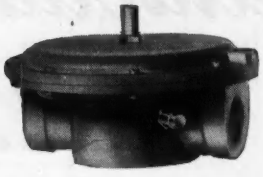
W. C. HOLMES & CO. LTD. · HUDDERSFIELD · LONDON · BIRMINGHAM

Telephones : Huddersfield 5280 · London : Victoria 9971 · Birmingham : Midland 6830

C 358

Tornado

AUTOMATIC GAS CUT-OFF DEVICE



THE SINGLE DIAPHRAGM, AUTOMATIC SO... OFF VALVE (*illustrated left*) *automaticcally ... the gas supply in the event of pressure dro... below a predetermined point. Not until all h... cocks on the outlet have been shut and gas pr... restored is it possible to re-open the valve.*
This appliance is for operation on systems ha... 150 to 2,400 cub. ft. of low pressure gas per...

INJECTORS BURNER NOZZLES BLOWPIPES RADIANT DISC BURNERS LAUNDRY AND TAILOR IRONS SOLDERING IRONS SOLDERING STOVES SMALL FURNACES

"TORNADO" AIR AND GAS MIXTURE CONTROLLERS AUTOMATIC CUT-OFF SWITCH (ALSO USED AS METER PROTECTION VALVE

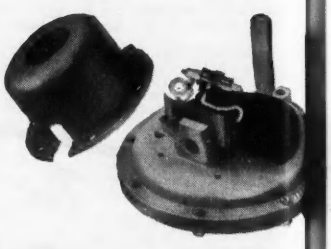
INDUSTRIAL GAS AND AIR FLOW SWITCH) AUTOMATIC SHUT-OFF VALVES NON-RETURN OR BACK PRESSURE VALVES METER PROTECTION VALVES (BY-PASS TYPE)

EQUIPMENT RELAY THERMOSTATS THERMOSTAT CONTROLLERS DIRECT ACTING THERMOSTATS SERVICE GOVERNORS AIR FLOW SWITCHES COMPRESSORS GAS FIRED UNIT HEATERS GAS BOOSTERS AIR BLOWERS

THE AUTOMATIC CUT-OFF SWITCH, *illustrated-right, automatically breaks the electric supply to motor-driven gas boosters or compressors if low pressure gas falls below a predetermined pressure.*

RANGE: *Type 1 operates between .2" and 1.2" w.g. pressure.*
Type 2 operates between 1.2" and 5" w.g. pressure.
Type 3 operates between 5" and 15" w.g. pressure.

Additional applications include its use as (a) an air flow switch in conjunction with a flame failure device and (b) a gas meter protector.



Keith Blackman LIMITED
MILL MEAD ROAD, TOTTENHAM, LONDON, N.17
Phone: Tottenham 4522 (twelve lines) Grams: "Keithblac, Norphone, London"

431/7

SPEED the fixing of all equipment with Rawlbolts and Rawlplugs. Get the machines and heavy stuff bolted down quickly, firmly, ready for immediate use with Rawlbolts — the dry fixing that does away with grouting-in and waiting for cement to dry.

Fix the lighter fittings — switchgear, pipes, cables, lights — with Rawlplugs — the fastest and firmest screw fixings in the world!

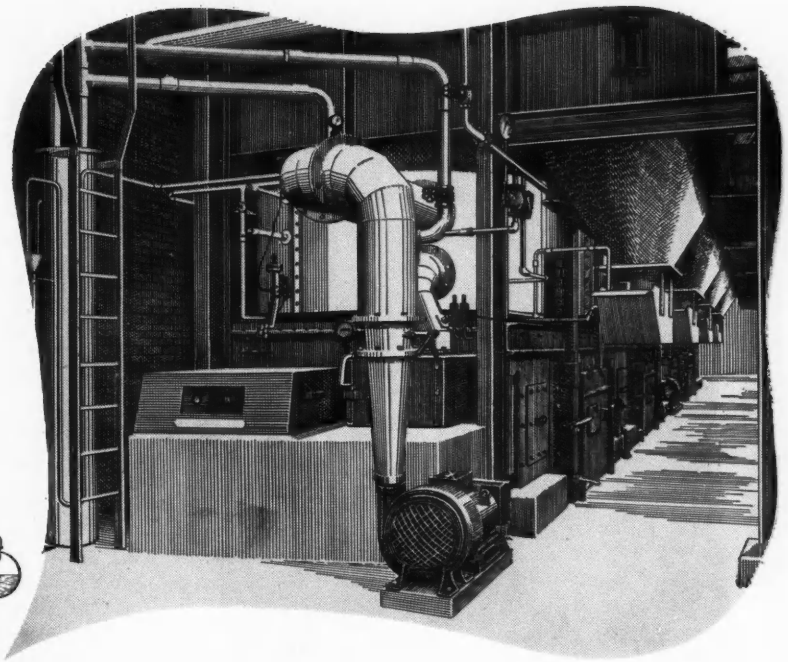
Use Rawlplug Fixing Devices where "speed is the essence of the contract"

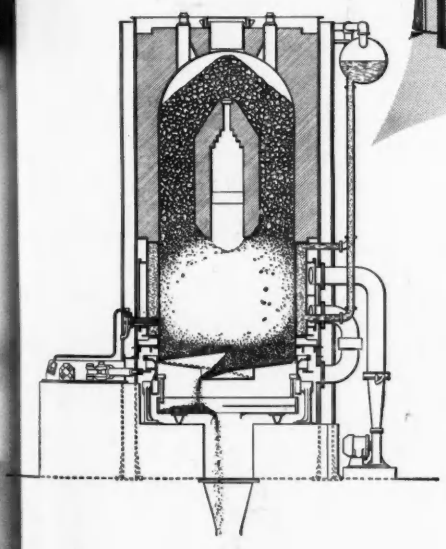
RAWLPLUG WALL PLUGS
FIXING DEVICES
WRITE FOR TECHNICAL LITERATURE

THE RAWLPLUG COMPANY LIMITED · CROMWELL ROAD · LONDON · S.W.

Printed by STRAKER BROTHERS LTD., E.C.2, for WALTER KING, LIMITED, 11, BOLT COURT, FLEET STREET, LONDON, E.C.4. Wednesday, July 16, 1952

less labour, less fuel –
and the GAS STAYS HOT





West's "Hot Gas" Mechanical Producer

does more than eliminate manual clinkering. It has a hot gas efficiency of 90% and shows a marked reduction in the combustible content of the ashes. That, in turn, means fuel economy.

Producer and dust extractor are enclosed in a heavily insulated steel casing. The gas offtake, situated centrally immediately over the flare bed, draws off gas at formation temperature and is completely insulated, so that full advantage is taken of the sensible heat conveyed DIRECT to the settings. Dust extraction efficiency is up to 90%.

To maintain a constant depth of ash below the fuel bed, the speed of the revolving helical grate which removes the ash is automatically controlled by a novel device.

West's Gas IMPROVEMENT CO. LTD.

ALBION IRONWORKS · MILES PLATTING · MANCHESTER 10

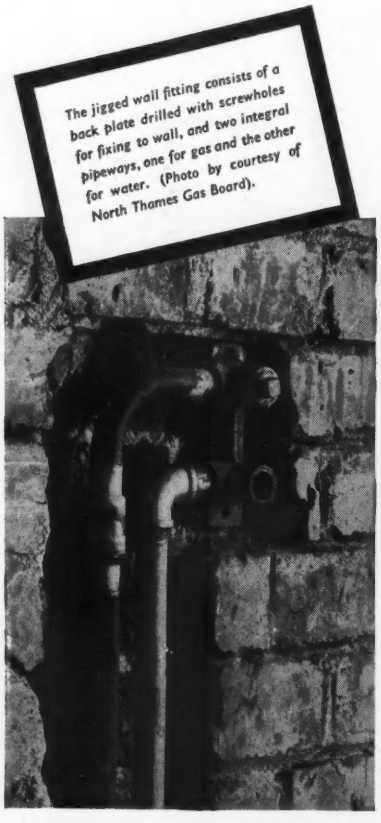
Telephone: COLlyhurst 2961. Telegrams: Stoker, Manchester.

London Office: Columbia House, Aldwych, W.C.2. Phone: HOLborn 4108-9 Grams: Wesgasco, Estrand.

44 HOUSING AUTHORITIES ADOPT ASCOT JIGGED WALL FITTING

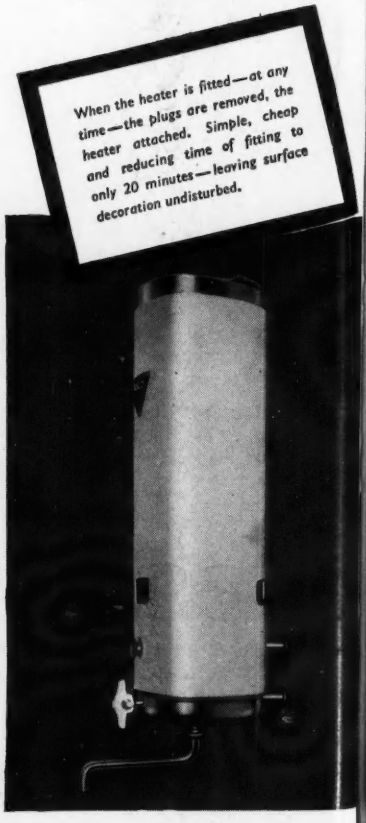
Cheap Installation of Alternative Hot Water System

The new Ascot jigged wall fitting which cuts the cost of installing gas water heaters at the kitchen sink to a few shillings, has had a tremendous reception. 44 housing authorities have already adopted it, and upwards of 20,000 have been installed. The Ascot jigged wall fitting is chased in by the sink during erection of houses or flats, leaving neat capped ends just exposed. The cost is negligible. A tenant can then arrange at any time for an Ascot sink heater to be fitted, a job which takes only 20 minutes and leaves the surface decoration undisturbed. Housing authorities have adopted the Ascot jigged wall fitting because it provides at extremely low cost the means of obtaining an alternative supply of hot water at the kitchen sink. *Tenants particularly appreciate this convenient service which supplements the solid fuel heating system, especially in the summer, and at the same time saves money and fuel.* The jigged wall plate takes the Ascot 503 range of heaters and the Ascot RS 52/1 boiling water heater.



The jigged wall fitting consists of a back plate drilled with screwholes for fixing to wall, and two integral pipeways, one for gas and the other for water. (Photo by courtesy of North Thames Gas Board).

Supply pipes and jigged wall fittings are chased into the wall during construction and plastered over. Plugged ends neatly protrude as shown.



When the heater is fitted—at any time—the plugs are removed, the heater attached. Simple, cheap and reducing time of fitting to only 20 minutes—leaving surface decoration undisturbed.

ASCOT GAS WATER HEATERS LIMITED • 43 PARK STREET • LONDON W